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TRUNK ENGINES.

We this week present our readers with engravings of the Root Trunk Engine, to which was given a prize medal at the Paris Exposition, and which is now on exhibition at the fair of the American Institute, forming one of the principal attractions there. To readers of the JOURNAL OF MINING, this engine is of special interest, not only on account of its great simplicity and durability, but because its extreme lightness effects a saving of nearly one-half in freight—an all-important item, as all mine owners in remote districts well know. Figure 3, represents a vertical section, and Figure 1, a perspective view of the engine; the same letters referring to the same parts in each. The cylinder *A*, is cast with the exhaust chamber *P*, running entirely around it; thus jacketing the cylinder with exhaust steam, and preventing the condensation that takes place in the ordinary engine, where the cylinder is exposed to the atmosphere. The steam chest, *J*, and the lower cylinder head are also cast on the cylinder. The trunk *D* (shown in perspective in figure 4), passes entirely through the cylinder and cylinder heads, and has a reciprocating motion given to it by the pressure of the steam alternately upon the upper and under sides of the piston, *C*, which is cast on the trunk. Within this trunk the connecting rod, *E*, swings, and is connected with it by the cross-pin, *W*. The connecting rod imparts motion to the shaft, *F*, by being connected with it by the crank, *G*, and crank pin, *H*. The trunk is kept in line while reciprocating by the upper guide, *B*, cast on the upper cylinder head and lower guide, *B'*, bolted on the lower cylinder head, thus relieving the cylinder and piston from side wear. As the insides and ends of the cylinder and guides, faces of cylinder heads, and the outside of the trunk and piston, are all turned and fitted up in a lathe, the piston must necessarily run true with the inside of the cylinder, or, in other words, the centres of the cylinder, both guides, trunk and piston, must always be in one line. Around the edge of the piston, at *a*, and around the ends of the trunk, at *b* and *b'*, in figure 4, are turned grooves, in which are inserted the steel packing rings, figure 5, which rings being turned eccentrically with the middle, at *f*, the thickeat, and gradually tapering in thickness to the ends, at *g*, exert a uniform pressure throughout their entire length. Leakage, at *g*, where the rings are cut, is prevented by the insertion of a tongne. Steam is also admitted under them, thus securing constant pressure and tightness. The steam chest, *J*, is bored out, and the face of the valve, *K*, in figures 1 and 3, is an arc of a circle of the same diameter as the steam chest. The valve is a separate piece from the valve stem, *L*, figures 1 and 6. Projecting from the face of the stem is the radial pin, *f*, which fits into a corresponding hole, *K*, in the valve. The valve is worked by this pin, but is not held rigidly by it, and is left free to adapt its face to the valve seat, independently of the wear or of the line of the stem. The stem is worked in the usual manner by the eccentric, *N*, and valve-rod, *M*. The course of the steam through the valve, steam ports, *O*, cylinder and exhaust port, *P*, will be readily understood. The heater is not shown in figures 1 and 3: but the way in which it is attached will be readily seen, at *e*, in figure 2. Its form or location may, of course, be varied as desired. *Q* is the governor, *R*, the oiler. The frame, *S*, is bolted on the lower cylinder head. *T* is the bed plate; *U*, pedestals; *V*, the key to tighten the journals; *D'*, outside bearing; *I*, fly wheel; *Y*, cap or cover over the trunk. The moderate price at which the manufacturers are able to supply these engines deserves consideration. Moreover, the expense of foundations, handling and putting up, which, in other engines, is a large item, is, by the construction of this engine, in a great measure done away with. The manufacturers invite engineers, persons interested in the improvement of engines and boilers, and parties about to make purchases, to visit the works, which may be easily reached by nearly all the principal lines of cars or omnibuses. Full particulars, price list, and illustrated descriptive catalogues may be had, on application by person or by mail, to the Root Steam Engine Company, 500 to 510 Second avenue, corner Twenty-eighth street, New York.

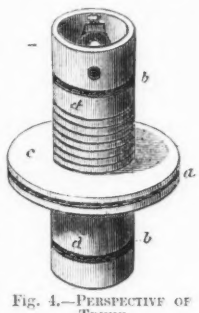


Fig. 4.—PERSPECTIVE OF TRUNK.

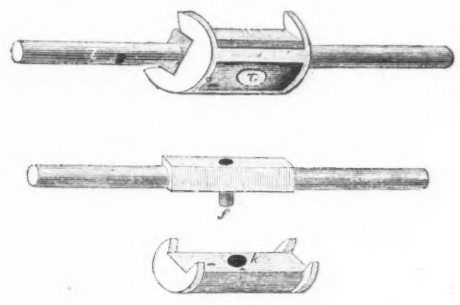


Fig. 6.

Fig. 5.—STEEL PACKING RING.

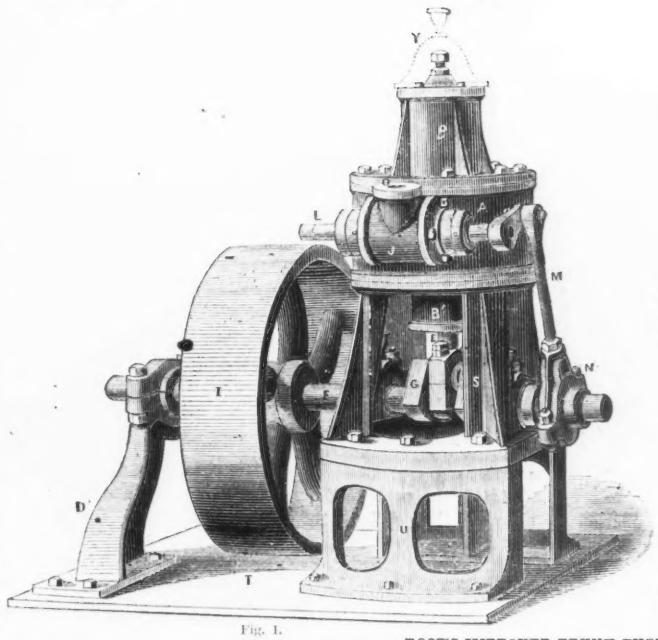


Fig. 1.

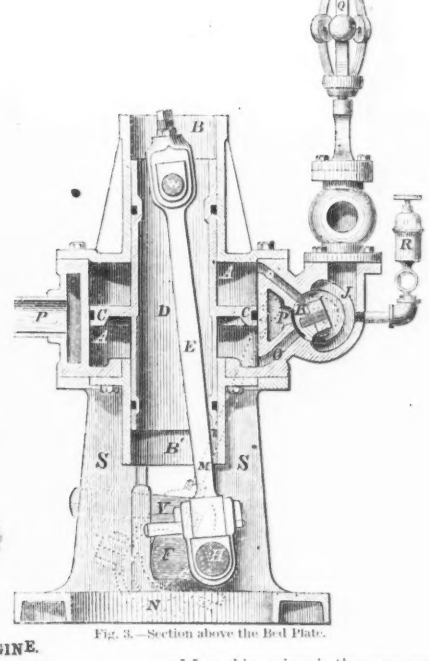


Fig. 3.—Section above the Bed Plate.

ROOT'S IMPROVED TRUNK ENGINE.

English Copper.

There were 174 mines in Great Britain producing and selling copper ore in 1866. These produced of copper ore 180,378 tons, valued at £759,118, from which we obtained metallic copper 18,153 tons, valued at £1,019,168. This shows a considerable falling off in the produce of copper mines. During the year there was an increase of more than 7,000 tons in the copper ore and regulus imported; of this Chili alone sent nearly 56,000 tons.

Stability of Gun Cotton.

F. A. Abel, F.R.S., has published the results of his experiments with Von Lenk's gun-cotton, extending over a period of three and a half years, which differ materially from those obtained by Pelouze and Maury, who came to the conclusion that, after exposure to light and heat, this kind of gun-cotton was liable to spontaneous decomposition and explosion. Mr. Abel, however, admits that the ordinary gun-cotton contains small proportions of nitrogenized impurities, having instable properties which are formed by the action of nitric acid upon foreign matters contained in the cotton fibre. These impurities give rise to free acid, which may be effectually neutralized and rendered nascent by introducing into the gun-cotton, when first made, one per cent. of carbonate of soda. To gun-cotton, which has not been long exposed to the action of sunlight, water acts as a perfect protector. If it contains sufficient water to feel damp to the touch, it is perfectly non explosive, and while in this condition it may be stored in large quantities, or transported to very distant places. The best practice would be to dissolve the required proportion of carbonate of soda, in water, and keep the cotton constantly damp with this solution.

Yield of Gold Quartz Mines in California.

The Reese River *Reveille* has collected the following slight but highly interesting statistics of the gold quartz mines of California: The principal quartz mining districts in that state are in Tulare county, about Clear creek: in Mariposa county; in Tuolumne county, near Sonora and Jamestown; in Calaveras county, at Angel's; in Amador county; in El Dorado county, at Logtown and vicinity; in Nevada county, at Grass Valley and Nevada; in Sierra county, near Downieville; and in Plumas county, at Indian valley and on Jamieson creek. We will give the average yield of gold per ton of a few of the principal mines in those different counties. The Princeton mine in Mariposa county, from 1861 to the latter part of 1864 yielded an average of $18 34 per ton, while the cost of milling and mining were $9 25 per ton. The Pine Tree and Josephine mines in the same county gave an average yield of $9 per ton in 1860 the whole cost of production being $5 50 per ton.

The App mine, in Tuolumne county has been worked for a number of years and the average yield of its quartz was $15 25 per ton, and the cost of production did not exceed $7 47 per ton. The average yield of Eureka mine, in Amador county, ranges from $10 to $15 per ton. Grass Valley, in Nevada county, is the most productive in the gold quartz region in California. Among its leading mines the Eureka presents some interesting features. From the surface to the depth of 35 feet, the quartz yielded from $6 to $12 per ton; below this depth the quartz increased in value from $14 to $21 per ton; at the 100 feet level it yielded $28 per ton: at the 200 feet level $37 per ton; and at the depth of 300 feet from the surface the yield was over $60 per ton. The average yield of its ore in 1866 was $47 15 per ton, while the cost of production was only $13 75 per ton. It is estimated by intelligent persons that the cost of producing gold in California, from exceeding five feet in width, will exceed $8 per ton under any circumstances.

Extravagance in Silver Mining—A Few Facts from the Gould & Curry--The Lesson they Teach.

From the San Francisco Bulletin, Sept. 11.

In the *Bulletin* of the 6th instant an advertisement appeared, notifying holders of stocks in the Gould & Curry mine that an assessment had been levied upon it. This mine has generally been considered the representative mine of Nevada; and for this reason some facts drawn from its present management will doubtless prove interesting, for they will tend to elucidate, partially at least, the causes that have brought about the levying of an assessment upon its stock, in place of another dividend; and which causes, being still at work, threaten to bring other mines on the Comstock lode into the same condition of partial or temporary exhaustion. From the date of the incorporation of the Gould & Curry company (June 27th, 1860,) until November 30th, 1866—77 months—230,540 tons of ore were worked by it, which is an average of 2,994 tons per month, or nearly 100 tons per day. Very often the amount of rock worked ran over these figures. In the year 1866, 60,417 tons were worked, which is at the rate of 5,000 tons per month, or nearly 170 tons per day. Some of the mines on the Comstock lode are depleted at a still greater rate. From the Savage, for instance, there are generally being taken about 300 tons of ore daily! There is probably no parallel for this rapid consumption of ore anywhere in the history of mining for precious metals. In the year 1866 the 32 chief mines of Grass Valley and Nevada City each crushed but an average of 2,681 tons of ore, or less each for the year than the Gould & Curry crushed every month for the first six and a half years of its exisience. The cause of this Cyclopean ravaging of the latter mine was due to two things; extravagant—indeed, often utterly reckless—expenditure had to be provided for, and dividends of two per cent. per month upon the inflated selling price per foot of the stock, and from five to six per cent. upon its corporate value, were paid for about three years. It was the declaring of these large dividends, and the ignorant assertion that they could be kept up for generations, that ran the stock up to the illegitimate price of $6,000 per foot. Its market value was constantly dependent upon the declaration monthly of a two per cent. dividend upon its selling price, and holders of stock were therefore vitally interested in keeping up the latter, and up they were kept as long as possible, along with the most reckless expenses that a mine was ever called to stagger under: and this, too, while prospecting ahead for future supplies of ore was entirely neglected. The average expense of mining and working the rock from the Comstock ledge is now about $20 per ton. Supplies, freight, salaries and pay of workmen are 25 to 75 per cent. higher than they are in California; and yet, in the face of these drawbacks, the managers keep paying stockholders monthly dividends upon the market value of from 2 to 3½ per cent. With the light of past experience before us, it may be set down as absolutely certain that such a mode of overworking mines is suicidal. No mine here will stand it—no mine in the world ever has long stood it. Even if the Comstock lode is worked to a depth of 3,000 feet—which the Sutro tunnel promises—but a few years will be required to exhaust the ore in the mines on it, if the fancy dividends, combined with the extreme expenses of the past, are kept up. In a year or two a branch railroad from the main line of the Central Pacific railroad will be running to Virginia, and this will aid vastly in reducing many present exhaustive expenses; and will, in addition, allow the immense water power of the Truckee to be used in driving quartz mills, and the doing away, to a great extent, with the present system of steam mills, fed by wood, costing $13 to $17 per cord. But even with the saving that will thus be brought about, and even if the Sutro tunnel was completed, with all the aids to lightening of expenses which it, too, will bring, we will unhesitatingly assert that none of the mines upon the Comstock can be expected to pay regular dividends of more than 1½ per cent. per month. The rushing process can squeeze more out of them occasionally, but it cannot keep it up; and the whole tendency of this system has been, and always will be, to keep the holders of the stock in suspense. They want their dividends regularly, and they want their stock kept up in value: and we need hardly tell them that in the past they have failed to have either, for no mine in the world can regularly honor the outrageous demands which those of the Comstock have been called upon to meet. As matters are now conducted, the stock is up one day and down the next—the expected dividend is paid one month and passed the next. Now, if a reasonable dividend rate is fixed upon, even if it be as low as one per cent. per month, and is paid, as it can be, regularly, the income and the value of the stock will be uniformly higher than they have been under the past system, while this would have the additional benefit of aiding largely in rendering "ring" stock operations impossible, by placing the value of the stock upon a permanent and legitimate basis. Mining stocks could then be held as permanent investments; and the favor with which they were viewed would rank next, if not equal, to the real estate of this city. Certainly shares in any of the prominent mines of Nevada county are so viewed, yet they do not represent as great richness as those of the Comstock lode. The average yield per ton of the ore of 18 of the principal mines of Grass valley in 1866 was $34, while the average yield of the ore from the Gould & Curry, for six years and a half, was $59.02 per ton. Under the private ownership system, with honest management, low expenses, and because attempts are not made to overdrive the yield, continuous handsome profits have been derived from the mines of Nevada county, and they are held in high estimation. Under what may justly be called the curse of non-accountability, and the dishonesty of officials bred to it, and of stock-jobbing operations which the incorporated system fosters, combined with reckless and ignorant management, and expenses which, even under the best management, were necessarily very high, but which, under that prevailing, were often rendered terribly higher than they need have been, stock in the Comstock mines has been viewed with suspicion, because their value and the profits from them have been constantly uncertain. The same causes that have kept down the mines named in the past are still at work; and the effect which they have had upon the Gould & Curry is typical of what their effect will be upon other mines in the same lode, if the rushing process is not put a stop to, and stockholders do not learn to be content with reasonable profits. As matters are now conducted, a proper amount of ore is never left ahead to keep up the profits of the mines. Almost as soon as a non-productive spot is struck in the ledge, the dividends have to cease, and a sort of terror takes hold of stockholders, who think the mine has given out, they either forgetting or being ignorant of the fact that the richest mines are no exception to the rule which makes everything mundane variable in its yield and profits. The ledge is at present lost in the Gould & Curry mine, and many doubtless think it is irrevocably, but it is not. The ledge has repeatedly been lost in the celebrated Allison Ranch and other mines at Grass valley; but it was always found again, as will be that of the Gould & Curry, sooner or later. But for the follies of the past in the management of the latter mine, there would still be plenty of ore on hand to pay current expenses, and yield a reasonable dividend to stockholders while the lost ledge was being searched for. In many cases the superintendents of Virginia City mines own either partially or entirely two or three quartz mills, which are employed in crushing ore from the mines which they superintend. Under this system, the superintendent is directly interested in keeping his mills employed, no matter at what expense of exhaustion to ore of the mine. Thousands of tons of rock are sent off to the superintendent's mills, which either only yield enough to pay for the crushing, or but an unimportant fraction over it. Such rock should not now be crushed, and probably would not be but for the reason named. In every business there are certain rules, without the application of which the wise do not look for success. Mining in the State of Nevada has generally been supposed to be an exception to ordinary rules; but failure after failure has abundantly proved that it has its definite business restrictions, which cannot be outraged without the usual entailment of failure. Despite the general belief to the contrary, when an skilled, honest and economical hands, there is no more profitable or certain occupation than quartz mining. Those who bring the above requisites to bear in it, actually run less chance of general failure than the husbandman does, for nature asks the skilled miner, who has a true quartz vein, to take less risk than the farmer is daily called upon to assume from climate, atmosphere and other drawbacks.

Original Papers.

THE SAN DOMINGO COPPER MINE.

WRITTEN FOR THE AMERICAN JOURNAL OF MINING BY R. W. R.

One of the most remarkable copper mines in the world is that of San Domingo, in South Portugal. Hartmann, a German mining engineer who visited the place in March, 1865, published in the same year an account of it in the *Berg-und Huettenmænnische Zeitung* from which we obtain the facts of the following description. The San Domingo mine lies about fifteen miles from the left bank of the Guadiana, and about two miles from the Spanish border. The fact that it is only accessible by difficult journeys over narrow mule-paths, explains how it is that so little is known about it, although it is, in fact, one of the most important mines in the world. The deposit has its outcrop upon a hill about forty meters high, and is characterized by a very decided "iron cap," or "gossan," which carries abundant efflorescence of iron and copper vitriol. Like the deposits of Ducktown, Tenn., Copperopolis, Cal., and others, this is not a fissure vein; but a *stockwerk*, or mass of ore. The length of the deposit is about 600 meters; while its thickness is sometimes 100 meters, and averages about 70 meters. There are so far no signs of a contraction in depth. The entire mass of this deposit is iron pyrites containing 10 to 15 per cent. of copper ores, mainly copper pyrites. The contents in copper average 3-6 per cent., in sulphur, 50 per cent. Gangue there is none, not even the smallest fragment. The country rock is metamorphosed clay slate of yellowish white or red color, conchoidal or splintery fracture, low gravity, and great hardness. When struck with a hammer, it gives a ringing tone. Taking all things together, Mr. Hartmann does not doubt the plutonic origin of the deposit. We cannot agree with him in that opinion; but leave the subject as one of purely theoretical interest, to continue our practical description. For many centuries this mine had remained in oblivion. Within the last ten years it was revived, and rented to a Portugese company, which, however, was not competent to utilize its fabulous resources, and soon resigned it to the possession of a French capitalist, who, in 1865, was still the owner. He leased it for a term of years (50 or 80) to Mr. James Mason, an English mining engineer, whose energy and skill, administering an immense expenditure of capital, have speedily developed the unequalled resources of this mine, and advanced its production to a point which was probably never before attained in the history of mining enterprise. The fact that he is only the lessee, and not the owner, naturally leads him to make the most of his time, and to work on a plan, which is, perhaps, not the best in every respect for the permanent success of the mine; yet, after all, the immense scale on which the operation is conducted, and the great results accomplished, are sufficient to make us overlook the faults, which are but spots on the disk of a splendid success. The business administration of the mine is excellent in every respect. Mr. Mason began his operations in 1860, with a tunnel, about 200 meters long, which was run from the foot of the hill to the NW. end of the deposit. This cross tunnel is remarkable for sloping downward into the mine at a grade of one in twenty. After striking the deposit, it follows horizontally along the SW. wall to the other end, and then back again through the middle of the deposit, parallel with its former NW.-SE. course. These two drifts were then connected, at intervals of 8 meters, by wide cross-cuts, leaving great masses of ore perfectly accessible on all sides. As there are from 30 to 40 meters in height of ore standing above this level, there is room for regular stoping on an immense pattern. It is evident that 10 meters of the "backs" have been gained by the downward inclination of the entrance tunnel, or adit. Nevertheless, such a piece of engineering would be altogether unwise, were it not that by natural drainage this level is kept perfectly dry. Shortly after these preparatory works were opened, an inclined shaft (grade 1 in 3) was sunk near the adit-mouth, and at a perpendicular depth of about 40 meters the second set of levels was established and vigorously opened. Even a third level, 40 meters below the second, was, already in 1865, in active preparation. The water is removed from both of these, by means of a powerful steam-engine and pump, through the inclined shaft. Ventilation is effected by means of air-shafts. The ore is brought from the upper level by means of tramways which run down the slopes, where the ore is loaded in baskets upon the cars, and these are then drawn by mule-teams up the inclined tunnel. From the second level the transportation is the same, only that the cars in the inclined shaft (which is too steep for hauling) are drawn up by a whim, with 8 mules. It will be seen that great expenditure of power is required to bring the ore to grass, under these unfavorable circumstances. Whether the difficulty might have been avoided in the case of the first level, we will not stop to enquire. The mine is connected with the Guadiana by a railroad more than twenty miles long, and including many heavy grades. Four locomotives and over 100 mules supply the motive power. The ore is loaded from the mine-cars into the large railway cars, and carried to the river, where it is dumped into the ships in waiting to carry it to the different parts of England. In 1865 *the daily production was about one thousand tons of ore!* This almost incredible quantity was nearly all obtained from the upper level. No one who considers the nature of the deposit, and the manner in which it has been opened, can fail to see that it affords an opportunity to work a large force and to increase the daily yield to an extent only limited by the capacity of the tunnel and tramway. It is precisely in such cases that administrative ability is distinctly felt. The neighboring Spanish mine of Tharsis, which has a pyritic deposit probably six times as large as this, has failed through want of skill to produce so good results. A picturesque and lively town (pop. 1865, 4,000) called San Domingo, has sprung up, within a few years, close by the mine—an evidence of the reality of its success and importance: since where the town stands was but recently a desert.

The secrets of this success may be summed up for the benefit of other miners, as follows:

1. The great size and massive character of the deposit, making all "dead work" unnecessary.
2. The natural drainage of the upper level.
3. The cheapness of labor.
4. The careful and yet bold manner in which the work has been laid out, for years to come. American engineers seldom or never prepare their work for so long a time in advance; and so are often crippled for want of stoping-room.
5. The route to the English markets, by rail 20 miles, and the rest of the way by ship. This railroad was built by Mr. Mason.
6. Strict and decided business management in all matters, down to the smallest detail.

CHEMISTRY OF THE PRIMEVAL EARTH.

BY T. STERRY HUNT, M. A., F. R. S.

Read before the British Royal Institution, and revised by the author for the Chemical News.

(Concluded from our last.)

We next enter into the second phase in the action of the atmosphere upon the earth's crust. This, unlike the first, which was subaqueous or operative only on the portion covered with the precipitated water, is sub-ærial, and consists in the decomposition of the exposed parts of the primitive crust under the influence of the carbonic acid and moisture of the air, which would convert the complex silicate of the crust into a silicate of alumina, or clay, while the separated lime, magnesia, and alkalies, being converted into carbonates, would be carried down into the sea in a state of solution. The first effect of these dissolved carbonates would be to precipitate the dissolved alumina and the heavy metals, after which would result a decomposition of the chloride of calcium of the sea water, resulting in the production of carbonate of lime or limestone, and chloride of sodium or common salt. This process is one still going on at the earth's surface, slowly breaking down and destroying the hardest rocks, and aided by mechanical processes, transforming them into clays, although the action, from the comparative rarity of carbonic acid in the atmosphere, is less energetic than in earlier times, when the abundance of this gas and a higher temperature favored the chemical decomposition of the rocks. But now, as then, every clod of clay formed from the decay of a crystalline rock corresponds to an equivalent of carbonic acid abstracted from the atmosphere and equivalents of carbonate of lime and common salt formed from the chloride of calcium of the sea-water.

It is very instructive, in this connection, to compare the composition of the waters of the modern ocean with that of the sea in ancient times, whose composition we learn from the fossil sea waters which are still to be found in certain regions, imprisoned in the pores of the older stratified rocks. These are vastly richer in salts of lime and magnesia than those of the present sea, from which have been separated by chemical processes, all the carbonate of lime of our limestones, with the exception of that derived from the sub-ærial decay of calcareous silicates belonging to the primitive crust.

The gradual removal, in the form of carbonate of lime, of the carbonic acid from the primeval atmosphere, has been connected with great changes in the organic life of the globe. The air was doubtless at first unfit for the respiration of warm-blooded animals, and we find the higher forms of life coming gradually into existence as we approach the present period of a purer air. Calculations lead us to conclude that the amount of carbon thus removed in the form of carbonic acid has been so enormous, that we must suppose the earlier forms of air-breathing animals to have been peculiarly adapted to live in an atmosphere which would probably be too impure to support modern reptilian life. The agency of plants in purifying the primitive atmosphere was long since pointed out by Brongniart, and our great stores of fossil fuel have been derived from the decomposition, by the ancient vegetation, of the excess of carbonic acid of the early atmosphere, which through this agency was exchanged for oxygen gas. In this connection the vegetation of former periods presents the curious phenomenon

of plants, allied to those now growing beneath the tropics, formerly flourishing within the polar circles. Many ingenious hypotheses have been proposed to account for the warmer climate of earlier times, which are at best unsatisfactery, and it appears to me that the true solution to the problem may be found in the constitution of the early atmosphere, when considered in the light of Dr. Tyndall's beautiful researches on radiant heat. He has found that the presence of a few hundredths of carbonic acid gas in the atmosphere, while offering almost no obstacle to the passage of the solar rays, would suffice to prevent almost entirely the loss by radiation of obscure heat, so that the surface of the land beneath such an atmosphere would become like a vast orchard-house, in which the conditions of the climate, necessary to a luxuriant vegetation, would be extended even to the polar regions. This peculiar condition of the early atmosphere cannot fail to have influenced in many other ways the processes going on at the earth's surface. To take a single example: one of the processes by which gypsum may be produced at the earth's surface involves the simultaneous production of carbonate of magnesia. This, being more soluble than the gypsum, is not always now found associated with it, but we have indirect evidence that it was formed, and consequently carried away, in the case of many gypsum deposits whose thickness indicates a long continuance of the process, under conditions much more perfect and complete than we can attain under our present atmosphere. While studying this reaction I was led to inquire whether the carbonic acid of the earlier periods might not have favored the formation of gypsum, and I found by repeating the experiments in an artificial atmosphere impregnated with carbonic acid, that such was really the case. We may thence conclude that the peculiar composition of the primeval atmosphere was the essential condition under which the great deposits of gypsum, generally associated with magnesian limestones, were formed.

The reaction of the atmosphere which we have considered would have the effect of breaking down and disintegrating the surface of the primeval globe, covering it everywhere with beds of stratified rock of mechanical or of chemical origin. These would now so deeply cover the partially cooled surface that the amount of heat escaping from below is inconsiderable, although in earliest times it was very much greater, and the increase of temperature met with in descending into the earth must have been many times more rapid than now. The effect of this heat upon the buried sediments would be to soften them, producing new chemical reactions between their elements, and converting them into what are known as crystalline or metamorphic rocks, such as gneiss, greenstone, granite, &c. We are often told that granite is the primitive rock or substratum of the earth, but this is not only unproved but extremely improbable. As I endeavored to show in the early part of this lecture, the composition of this primitive rock, now everywhere hidden, must have been very much like that of a slag or lava, and there are excellent chemical reasons for maintaining that granite is in every case a rock of sedimentary origin—that is to say, it is made up of materials which are deposited from water like beds of modern sand and gravel, and includes in its composition quartz, which, so far as we know, can only be generated by aqueous agencies, and at comparatively low temperatures.

The action of the heat upon many buried sedimentary rocks, however, not only softens or melts them, but gives rise to a great disengagement of gases, such as carbonic and hydrochloric acids, and sulphur compounds, all results of the reaction of the elements of sedimentary rocks heated in presence of the water which everywhere filled the pores. In the products thus generated we have a rational explanation of the chemical phenomena of volcanos, which are vents through which these fused rocks and confined gases find their way to the surface of the earth. In some cases, as where there is no disengagement of gases, the fused or half-fused rocks solidify *in situ*, or in rents or fissures in the overlying strata, and constitute eruptive or plutonic rocks, like granite and basalt.

This theory of volcanic phenomena was put forward in germ by Sir John F. W. Herschel thirty years since, and as I have during the past few years endeavored to show, it is the one most in accordance with what we know both of the chemistry and the physics of the earth. That all volcanic and plutonic phenomena have their seat in the deeply buried and softened zone of sedimentary deposits of the earth, and not in its primitive nucleus, accords with the conclusions already arrived at relative to the solidity of that nucleus, and also with the remarkable mathematical and astronomical deductions of the late Mr. Hopkins, of Cambridge, based upon the phenomena of precession and nutation: those of Archdeacon Pratt; and those of Professor Thompson on the theory of the tides; all of which lead to the same conclusion—namely, that the earth, if not solid to the centre, must have a crust several hundred miles in thickness, which would practically exclude it from any participation in the plutonic phenomena of the earth's surface, except such as would result from its high temperature communicated by conduction to the sedimentary strata reposing upon it.

The old question between the plutonists and the neptunists, which divided the scientific world in the last generation, was, in brief, this—whether fire or water had been the great agent in giving origin and form to the rocks of the earth's crust. While some maintained the direct igneous origin of such rocks as gneiss, mica-schist, and serpentine, and ascribed to fire the filling of metallic veins, others—the neptunian school—were disposed to shut their eyes to the evidences of igneous action on the earth, and even sought to derive all rocks from a primal aqeous magma. In the light of the exposition which I have laid before you this evening, we can, I think, render justice to both of these opposing schools. We have seen how actions dependent on water and acid solutions have operated on the primitive plutonic mass, and how the resulting aqueous sediments, when deeply buried, come again within the domain of fire, to be transformed into crystalline and so-called plutonic or volcanic rocks.

The scheme which I have endeavored to put before you in the short time allotted, is, I have endeavored to show, in strict conformity with known chemical laws and the facts of physical and geological science. Did time permit I would gladly have attempted to demonstrate at greater length its adaptation to the explanation of the origin of the various classes of rocks, of metallic veins and deposits, mineral springs, and of gaseous exhalation. I shall not, however, have failed in my object, if, in the hour which we have spent together, I shall have succeeded in showing that chemistry is able to throw a great light upon the history of the formation of our globe, and to explain in a satisfactory manner some of the most difficult problems to geology; and I feel that there is a peculiar fitness in bringing such an exposition before the members of this Royal Institution, which has been for so many years devoted to the study of pure science, and whose glory it is, through the illustrious men who have filled, and those who now fill, its professional chairs, to have contributed more than any other school in the world to the progress of modern chemistry and physics.

Mining Summary.

GOLD AND SILVER.

Colorado.

Mr. Hollister writes to the Central City *Register* from San Juan, a settlement consisting, he says, of half a dozen houses and a saw mill, that Mr. John Collum, the agent of the Boston Silver Mining association, is in hopes of getting his reduction works in operation yet this season: "From the experiment of Mr. Caleb Stowell at Georgetown last year with the American hearth, he is satisfied that it will answer for the reduction of the argentiferous galena, that metal having first been thoroughly separated from all others and from the gangue rock, and the proper skill secured for the management of the business. The process is comparatively cheap. The hearths, Colorado manufacture, cost $300 each. A Mackenzie blower, weighing 4 000 pounds, is worth in the States $800. It requires at the outside a five horse power, and answers for six hearths. One Dodge crusher cost in the States $500, a double Collom separator $1,000, and a slag and cupel furnace completes the apparatus. Freight from Central round through Breckinridge is five cents a pound at present: from the States hither it ought not to be more than ten. There are the boiler and engine, the building, and the cost of erection. One hearth, working six men in eight-hour shifts of two each, will reduce two to three tons a day. From these data any one can figure up the expense of a mill of fifteen tons a day capacity. The company have several lodes in the vicinity. The most valuable is the Comstock, situated on the northwestern face of Glacier, 1,500 feet above the creek, the hill rising at an angle of thirty degrees, which has been struck 600 feet in length, everywhere showing a vein of galena twelve inches in width, containing considerable grey sulphuret of copper (where decomposed, a carbonate, green), which is very rich in silver. Ten pounds of average ore was smelted in a crucible, producing silver at the rate of $250 a ton. A larger test proved about two thirds as productive. It is expected to work up to $100 a ton. A tunnel 85 feet long, cutting the vein fifty-five feet from the surface, will soon be completed. From the mouth of the tunnel a plank shute will slide the ore down 1,200 feet, whence a wagon road runs to the mill. One other of the company's lodes, called the Prima, is very large and contains ruby ore. Nothing has been done in it."..... We condense the following items from the Georgetown *Miner*, of September 26: Between Mill City and Fall River some four or five arastras are running, we learn, with good success. The surface ores of that section are rich in gold..... Ore from the Baker lode, West Argentine, is now being delivered at the works of Garrott, Martine & Co., for reduction. We learn that from one to two hundred tons of this ore is under contract for reduction..... At the point of rocks, just above the Park, Messrs. Murdoch, Egan and Sheridan are getting fine black sulphurets and galena, similar to that of the Augusta lode, located just above it, from their Baltimore American lode, one of the most accessible mines in the district, and for its limited development, one of the fairest..... Tuesday's *Register* brought the news of the entire destruction of Dubois mill, situated on North Clear Creek, a short distance above Black Hawk. ..... We were shown yesterday by Messrs. Carpenter and Simmons two beautiful buttons of silver taken out by Fred. Johnson, Esq., superintendent of the Smelting works, from ore from the Equator lode. The weight of the bullion is 157 ounces, coin value $211 95, currency value $275 53, at the rate of $1.287 per ton. The Equator is one of the best and richest lodes in the district..... A few days since we visited the Brother Jonathan lode situated upon Democrat Mountain. The lode is being worked by a level, and shows a crevice between walls, of four feet in width, with an ore vein on the south wall eighteen inches in thickness, and one on the north wall of six inches. The ore is a silver sulphuret, bearing galena and iron sulphurets..... Yesterday we visited the Monticello lode, situated upon Columbia Mountain about 800 feet above the Nuckol's lode. This lode is opened to a depth of about twelve feet by a shaft, and shows a crevice about six feet in width between good permanent walls. The ore is a rich sulphuret of silver, bearing some galena. This is one of the most promising lodes in the district. The lode is being actively worked ..... We are pleased to note among the recent arrivals here, Mr. Booth, vice president of the Baker Silver Mining company, and formerly connected with the Philadelphia post-office ..... Through the agency of Murdoch & Buddee, about 600 pounds of rich ore from the North American lode, owned by W. T. Nichols & Co., was on the first of the week shipped to New York to be operated upon by the Harding chemical process, which, having been successful in its experiments on good ores around Central City, desire to try the ores from the silver mines in this vicinity. We learn, if satisfactory results are obtained, it is intended by the company to erect reduction works here on a large scale ..... The following is the silver bullion reported from September 12 to this morning: Fred. Johnson, of the Smelting works, reports 1,284 ounces, coin value $1,733 40. Currency value $2,253 52. These works have been running during the above-mentioned time on second class ores. Garrott, Martine & Co., report 1,965 50 ounces, coin value $2,240 97, currency value $2,913 26. During this time these works were idle four days for the want of salt. The total amount of bullion shipped is 3,249 50 ounces, coin value $3,974 37, currency value $5,166 78. ..... In reference to the Dubois mill, the *Register* says: The loss sustained is about $25,000 or $30,000, of which Mr. Dubois sustains about one third. The balance falls mostly on parties in New York. The mill cost about $60,000, and was worth that sum before the fire occurred, but the stack to the furnace is still in good condition, and it is probable that the engine will not be seriously injured. It is, therefore, estimated that the mill can be rebuilt for $25,000 or $30,000. But the chief loss is that sustained by the community. It was perhaps the best mill in Colorano. It was one of the mills which has been for months taking out gold, and day after day improvements had been made until it was working admirably. It is to be hoped that it will be immediately rebuilt. Should this be done, it will doubtless prove a paying investment. ..... Thur day's *Register* says: The shipments of the week foot up about $30,000..... A private letter gives information that the placer diggings in Colorado gulch are paying $25 per day to the man..... A nugget of gold that weighed about sixteen ounces and worth in currency nearly $400, has been found in McNulty's gulch. This is said to be one of the largest nuggets of gold ever found in the Territory.

Montana.

A correspondent of the *Montana Post* says: A visit to the mill near Summit, now under the management of Colonel A. K. McClure, gave me great satisfaction. The crushing machine is of the kind that has been in usee from the earliest times. It consists of four Chilian mills, the workmanship of which is of a superior order. The crushing wheels are of iron instead of stone, as in most mills of this character, and are cast hollow, in order that they may be filled with lead. By this arrangement great weight is concentrated into a wheel of moderate size: and these mills have greater crushing capacity than any that I have hitherto seen. The capacity of the four mills is twenty-four tons per day. The amalgamation process is conducted in part in these crushers. From them it passes over amalgamated copper plates, and if the ores are silver-bearing or carry gold in a condition that renders it difficult to save, the tailings are subject to a further treatment, by the Frieburg process, in the rotating barrels. There are sixteen of these capable, I believe, of receiving a charge of half a ton each. Salt is used in the barrel amalgamation process; but in order to secure its perfect action, the pulverized ore should be roasted with the salt before being introduced into the barrels. This seems to be the only difficulty in these works, and this can easily be supplied. The following is a full statement of the European modes of conducting amalgamation with this apparatus, for the benefit of all whom it may concern: The barrel process is limited mostly to silver ores, having a large per centage of silver; but these ores must be comparatively free from base metals. Ores having more than five per cent. of lead, or even one per cent of copper, cannot be worked satisfactorily. The pulverized ore, which should, if possible, be crushed dry, is mixed with with from four to eight per cent. of common salt, the amount varying with the proportion of silver present; and the mixture is subjected to a thorough roasting in a reverberatory furnace. In order that the roasting process shall produce its maximum beneficial effect, the presence of pyrites is essential; and if the ore itself contains little or none, it should be obtained from other sources and added to it. One-half ton of roasted ore is introduced into each barrel, with about three hundred weight of water, and from seventy-five to one hundred pounds of scrap iron. The barrels are closed and made to revolve with a speed of from fifteen to twenty revolutions per minute for two hours. The action of the iron scraps upon the saline elements of the roasted ore reduces perchlorides to protochlorides, and prepares the mass for the introduction of mercury. If the mercury should be added before change has been effected, that metal would be in part converted into calomel, and would be lost. After the two hours' treatment without mercury, 500 pounds of that metal are introduced, and the barrels again set in motion. The reaction of mercury, iron an chloride of silver results in the decomposition of the latter with the formation of chloride of iron, and a perfect combination of the silver with mercury. The temperature of the mass rises considerably, owing to the chemical reaction. After the introduction of the mercury the rotation of the barrels is kept up from six to eighteen hours, according to the quality of the ore. This is one of the oldest and most successful processes of amalgamation, and is peculiarly adapted to a class of ores in this vicinity ..... The following items are condensed from the *Post* of the 25th ult.: The most exciting topic which has transpired of late in this vicinity has been the sale of the Whitlatch Union. It was consummated on Tuesday last, Whitlatch disposing of his entire interest in the mine, buildings, &c., to J. H. Hubbell, of the Northwest Fur company, George Sol. Meredith, Surveyor-General of Montana, and Pinney & Trumbull, bankers, of Helena, for the sum of $250,000. This comprises all the ground on the mine, except that owned by the Philadelphia Gold Enterprise company and the IXL company, and a few other outside parties. The mine was recorded on the 28th of February, 1865, since which time work has been constantly done on it, until at the present time it is one of the best developed leads in the Territory; and under able and efficient management, there is beyond a doubt sufficient wealth in it to make Rothchild's of all interested in its purchase. The sum taken in connection with the known wealth and advanced state of development of the mine is comparatively small, and the sale can only be accounted for on the charitable grounds that the owner wished to withdraw himself from the excitement and turmoil incident to a miner's life, and retire on a handsome competence. And just here we wish to state that there is not now, and probably never will be, a man who better deserves the good fortune which has fallen to the owner of the Whitlatch Union. It is his intention, we understand, to go East; and if such is the case, Montana will hardly look upon his like again..... Messrs. John Simonds and Henry Augustine sold to Mr. J. C. Ricker 88 feet of the east end of claim No. 1, west from discovery, on the Whitlatch Union lode, for the sum of $10,000 being at the rate of $125 per foot. An exceedingly good bargain..... Mr. L. W. Borton, an energetic and well known resident of this Territory, organized in Wheeling, Virginia, last February, a mining company known as the Hot Springs Gold and Silver Mining company. It is composed of a limited number of business men in that place. They purchased a fifteen stamp mill, which is now being brought through, and will be on the ground in ten or fifteen days. The company own some very promising leads in the Hot Spring district. They have ample power for propelling the mill, and extra power for hoisting, etc. Mr. John F. Hervey is superintendent, and has several years' experience among mines and minerals to practically qualify him for his labors..... El Dorado Bar ditch, it is thought, will be completed by the middle of the next month. As the certainty of its being finished becomes demonstrated every day, claims on the bar are loking upward, and now range in prices from $500 to $1,500, and ready sales are found at these rates .....A new gulch has lately been discovered by Colonel Woods. The gulch is situated on the headwaters of Salmon river, across the divide from Pioneer gulch, a tributary of Deer Lodge. The gulch has been named Dablonega, and prospects sufficient are obtained to warrant the running of a drain ditch..... The new diggings on Thompson's River are attracting considerable attention, and parties are every day leaving the mines in our immediate vicinity for the new El Dorado. The report represent the diggings as being good, with plenty of water..... At Gravilly Range a tunnel is being run into the hill at the expense of the claimholders, for the purpose of prospecting it, and highly flattering results have been obtained..... From a correspondence which appears in the *Gazette* over the signature of "Ninette," we glean the following particulars with reference to the new mines further north. The mines are situated on a tributary of the Kootenai, and empties into that stream below the Big Bend. Prospects as high as $1 25 and as low as two cents to the pan. It is from two to ten feet to the bed-rock, with plenty of water. It prospects better than either Boise or Kootenai did. There are some five or six hundred men now in, and more going daily. The direct route is down the Hellgate canyon, pass Missoula, and turn north taking the road to Jocko Valley, thence down said valley to Flathead river, crossing the river to Collins ferry, thence on the main travelled road to Horse Prairie, where the road turns off through the mountains.

Idaho.

We have copies of the Owyhee *Avalanche*, of September 14 and 21, from which we compile the annexed summary of mining news: Preparations are being made to run the Oro Fino mine and mill (or mills) all winter. A visit underground showed that the ledge becomes wider and better as it increases in depth. At present it varies from four to seven feet in width, and richer ore than was ever before known in the mine is being taken out. The almost perpendicular casings consist of smooth granite that have a very neat appearance, where the quartz is taken out. An examination of the dump pile showed several tons of rock that had the appearance of having come in contact with a shower of molten gold that had spattered over and penetrated it throughout..... Captain J. C. Ainsworth—an interested party in the Surplus Oro Fino and the Ainsworth quartz mill, on Sunker Creek—has bonded the Surplus for one year to Messrs. Walbridge, Cole & Crane, who are to sink 100 feet as a part of the consideration. Laborers have already been engaged, and with steam hoisting works at hand, the work will go right along. We learn from miners and others who have worked in and visited this mine, that there is an excellent prospect, with a little more labor, of finding a body of ore equal to the present rich stuff coming from the Oro Fino. The last ore obtained from the shaft was worth $25 dollars per ton. Carefully assorted, the Surplus Oro Fino ore will pay a neat profit from the beginning..... There is now a great excitement on the Oro Fino mountain, caused by the discovery of a rich ledge, claimed by three different parties under as many different names. The ledge bears evidence of being immensely rich—from five to twenty dollars to the pan being frequently obtained from dirt and decomposed quartz in the immediate vicinity of the ledge. We saw ore that was taken from the vein near the surface, where Fogus is sinking a shaft, with fine gold visible to the naked eye all over it..... The Minear Mill is now engaged in crushing the ore from the Ida Elmore..... Several tons of Pauper ore recently crushed averaged $50 per ton..... At Flint Black's mill is running on Rising Star ore. Where it is taken out, the ledge is sixteen feet wide. The Iowa company's mill is nearly completed. ..... The *Statesman*, of the 17th and 18th of September, says: The Boise and Owyhee Mountains have, in the mean time, taken a covering of snow..... A correspondent from Yuba says there are fifteen tons more of ore out of the Atlanta waiting to be crushed. He says he has a piece of ore from the ledge which looks as though it would yield ninety per cent. of silver. There is increasing activity in that district among miners..... The *World* of the 18th says: Some excitement has prevailed concerning new diggings from Idaho City—christened Deadwood. Many have been going and coming with the old songs of "bilk" and "biggest thing on land"..... The Lewiston *Journal*, of September 12, says: The Chinamen engaged in mining on the bars of the Snake opposite Lewiston, are making from $1 25 to $1 50 per day to the man, and at another they are making from $1 50 to $2 per day..... Flour is selling in Lewiston at $5 per barrel.

The Montana *Post*, of September 12, says: We learn from parties lately arrived from the Salmon mines that the miners in the Lemhi Basin are to a man doing well. About three hundred men remain, all of whom have employment. On Sunday, the 8th inst., more money was in circulation than at any previous time this season. The miners and merchants, as a general thing, feel sanguine that the camp will prove better next season, and more money be taken out than that of 1867. Large ditches are being brought into Smith's, Ward's, and Sierra gulches, which are now nearly completed, when those localities will again yield largely. A majority of those who left Salmon river this summer crying "humbug," may consider themselves fortunate to be able to return to that locality next season.

California.

Nevada County.—Professor Silliman, in his notes on Grass Valley, says of the Eureka mine: From the date of its location, February 7, 1857, to the close of 1858, the mine proved only an expense to its owners, and its history is instructive, as suggesting that shallow surface explorations, in gold mining, may be as unsatisfactory as they are known to be in other mining enterprises. So late as 1858, it is said that 5,000 tons of quartz taken above the drain level, or thirty feet from the surface, yielded in the mill less than ten dollars per ton in gold; not returning expenses. A shaft sunk to a depth of about fifty feet, afforded quartz, however, which yielded about fifteen dollars per ton, and the amount of gold rapidly increased to $28 at 100 feet. Between the 100 and 200-feet levels the average yield was about $37 per ton; and between the 200 and 300-feet levels the average has been about $50 per ton, rising to $64 in the last four months of 1866. There are, in fact, two distinct veins in the Eureka mine, separated from each other by a mass of greenstone, or metamorphic sandstone, about 28 or 30 feet in thickness. The smaller of these veins is on the south and has not been explored, but is a well defined vein at the points where the shaft and cross-cuts have exposed it. The greenstone forms the hanging wall of the main vein, and is particularly regular and smooth, in some places beautifully polished. The foot-wall consists in some parts of soft serpentine, and when the vein pinches it, appears to be from swelling of the foot-wall. No other mine in this region has such a structure as the Eureka so far as I know, and there is much in the peculiarities here described, to favor the highest confidence in the permanence of this great ore channel both in depth and extent. It is interesting to analyze a little more in detail the returns of this mine, as illustrating a point already alluded to, viz.: its progressive increase of gold with an increase of depth. From October, 1865 to December 31, 1865, the quantity of quartz crushed was 2,445 tons, yielding an average of $33 87 per ton, and costing to mine and reduce $13 50. From January 1 to June 1, 1866, the crushing was 4,703 tons, averaging $42 68 per ton, at a cost of $12 52 per ton. From June 1 to September 30, 1866, the amount of quartz crushed was 4,228 tons, giving an average yield of $60 33 per ton, at a cost of $15 78 per ton. For the year ending September 30, 1866, the total crushing was 11,376 tons, yielding an average per ton of $47 15, at a mean cost per ton of $13 75. The net profits for the year ending September 30, 1866, were $368,042 18. The ratio of costs of mining to the gross product was for the three periods named above, respectively 40½, 29½, and 26½ per centum. In the mining costs are included all charges for dead work, machinery, etc. The profits of the Eureka mine have, therefore for the period named averaged in round numbers from 60 to 74 per cent. of the gross product of the mine. The earnings are divided every 28 days, making 13 annual dividends. The bullion of the Eureka mine is 850 thousandths fine, worth $17 57 per ounce. This value is, of course, variable, say within five thousandths.

Utah.

The Salt Lake City *Telegraph*, September 5, says: Bolivar Roberts, Esq., has just returned from a visit to the South Pass gold mines. He reports that soon after the late stampede, Terry's party returned and others kept following from various points, including some from Reese river and from the northern mines. There were not, however, exceeding a hundred men on the ground when he left, but they were still coming. He met one company of forty men on his return. There were several companies organized and in good working order—the Alturas, the Deserct and the Extension Mining companies and the Wyoming Mining and Ditch company. Several small prospecting parties were also organized and very active and enterprising in hunting up new ledges. A Mr. Murphy had put up an arastra and was crushing rock from the discovery claim on the Ceriso lode, it is supposed with good success, as the sample brought by Mr. Roberts was exceedingly rich. They had not seen any sign of Indians since the stampede. The miners, however, had not prospected any great distance from the camp, but several companies were now being formed to prospect Strawberry creek and other localities in that vicinity.

Canada.

The Madoc *Mercury*, Oct. 5, discourses as follows: The expediency of giving publicity to current doubts as to the reality of the numerous reported discoveries of gold and silver in various localities, is, we find, called in question in some quarters. We do not view the matter in that light at all. The silence of the press on the subject would be of little avail, so long as individuals freely express an adverse opinion in conversation. Besides, all that may be said or written on the subject cannot affect the ultimate result. Either there is, or there is not, gold and silver to be found in paying quantities in this locality. If there is, the doubts of the incredulous cannot long delay the progress of mining enterprise, as very general attention is now being directed to the mineral resources of Canada; if there is not, all the exertions that may be made by speculators cannot succeed in keeping up the excitement long enough to pay them for fostering a delusion. In a word, we do not believe the question to be one that can either be written up or written down; but that it must stand upon its own merits, which can only be decided by actual experiment, and the employment of a sufficient amount of capital. The doubts, so far as we can perceive, are entertained chiefly by those who have never had faith enough to invest anything in mining operations at all; and as yet we do not hear of any intention of a general abandonment of the work by those who have made a commencement; and of those who have suspended operations, it is rather from a want of means than from any lack of faith. The chief topic of conversation in connection with the subject for the last few days has been about the remarkable difference in the result of assays of rock, taken from the same place, but assayed by different individuals. At present, in the absence of some of the parties concerned, we shall say no more than this—that the assays, in some cases, have shown that the rock contained gold in quantities that would pay amply for working; and in others, that it contained no gold at all. Whether this difference arises from the unequal diffusion of the gold through the rock, or from the superiority in one case, and the inferiority in the other, of the assaying processes employed, is a matter for the respective assayers to decide between themselves. We see it so frequently stated in American papers that large quantities of gold have been obtained by new processes from ores from which a portion of gold had been extracted by other processes, and then thrown aside as intractable or worthless, that there seems no reason to doubt some assayers may be successful in finding gold where others may fail to do so. We find in the *American Journal of Mining*, of September 28, an article reviewing the claims of the "Stevens Flux," "a new process for separating gold and silver from the ores," by which, according to the proprietors of the flux, "a very much larger amount of gold can be obtained from the same quantity of ore, than could be had by any other process or means known in mining." The question is discussed scientifically and at considerable length by the reviewer, who does not give by any means an unqualified assent to the claim, but admits "it would not be strange, if experiments on a small scale should present results surprising to unskilful observers." As the proprietors of this flux assert that the mixture is invariably, universally, and in the hands of competent men, able to extract "five, ten and even twenty times" as much gold as the usual fluxes, it would appear that there is a good deal still to be learnt in the art of assaying for and extracting gold: and that there is a possibility of the precious metal being obtained by some processes in cases where its presence might fail to be even detected at all by other means .... Messrs. Scott & Taylor's crushing mill at Eldorado will be in operation in a few days; Messrs. Gilbert & Turley's will also soon be ready to go to work again; and the building for the reception of the machinery is being rapidly pushed forward at the Richardson mine, so that in a very brief period the general average value of the gold-bearing rock can be tested on a sufficient scale, and with more correct economic results than can be obtained by assays of small and selected specimens..... We have been shown by Mr. Mitchell a specimen of the rock containing gold obtained within the last few days from the Eldorado mine, the shaft of which is now nearly forty feet in depth.

British Columbia.

The *Colonist*, Sept. 31, in the course of an article on mining affairs, says: More gold has been taken out of the various claims for the past month than for any corresponding period since the Cariboo mines were first discovered. It is confidently believed that the amount of the precious metal washed out during the present will exceed that of any previous year..... We have files of the *Sentinel* to the 19th of Aug., from which we glean the following condensed summary of news: Mining operations on Williams' creek had been retarded for want of water, that is, the creek having gone down very much in the last eight or ten days. The following will show the week's yield of a few of the claims: McLaren company, 117 oz.; Dutch Bill company, 50 oz.; Davis company, 80 oz; Prairie Flower company, (for two day's) 35 oz.; the Aurora company washed from twenty-four hours work 526 oz., and again on the 18th, 540 oz., the total for the week being one thousand one hundred and twenty-eight ounces! On Stout gutch the Alturas company washed up for the week 122 oz. A new gulch, called Eureka gulch, which empties into Williams' creek, a short distance below Cameronton, has been staked off within the last few days, in consequence of the prospects obtained by a company near its mouth who washed up four ounces of coarse gold out of the bottom of their shaft, thirty feet deep.... We notice that the Grouse Creek Mining dispute still continues. A correspondent of the *Colonist* writes: Since the Governor left, the same set of men who compose the Canadian company, now calling themselves the Sparrowhawk company, acting under Mr. Booth as their foreman, have taken the remainder of the Flume company's ground, and are now working it against the positive orders of the courts made to them twice within the past week. ..... The same paper remarks: The report of the outrageous conduct of the Sparrowhawk company on Grouse creek is fully confirmed. It is rumored that the Flume company will decline to submit the case to arbitration, and, in consequence of the inability of the Governor to enforce the laws, will petition her Majesty on the subject.

COPPER.

San Domingo.

Accounts direct from San Domingo to the 18th ult., are much more favorable than recent reports via Havana. Various enterprises in which Americans have engaged are represented as prospering. A correspondent of the *Express* says: A railway track has been lately laid from this city to the copper mines of the Nigua River, and much of the road is already open for carts and camels. It is the first charter for a railway ever granted on this island. I believe—certainly the first ever begun—and the work has advanced up to the terms prescribed by law, and to the entire satisfaction of the government. All these, and some large mining associations, are American enterprises. I think I told you before that a New York copper company had introduced camels from the Canary Islands, to transport ore from their mines to the sea, and these animals seem to be doing extremely well. There has since been regularly established a camel train from Santiago, the city of the interior plains, to Monte Christi, on the north side of the island. The charter for this camel road, with privilege to convert it into a tramway or railroad with branches at discretion, was issued to-day to some New York railroad men. A like charter for the navigation of the river Yuna, with a road to connect with the Santiago Canal road, had been previously granted to M. Dubreuil, a French gentleman, so that communication from Monte Christi across the whole breadth of the republic to Samana Bay is secured. Most, if not all of these enterprises, are in capable hands, and French, English, Italian and American capitalists are largely concerned in their accomplishment. Americans have the largest interests here, however, and are, as usual, the least protected by their flag and navy.

Michigan.

The Houghton *Gazette*, Sept. 26th, says: A visit to the Concord mine on Saturday last, confirmed again our expressed opinion that this is among the promising young mines of the district. Although work was only recommenced August 15th, and but sixteen miners employed, about ten tons of mass and barrel work have been taken out and cleaned, and there is considerable quantity showing, in the large rocks brought to the surface but yet unbroken. There is also a large pile of stamp rock broken, ready for stamping, that will yield not less than three per cent. There must be near five hundred tons of this rock, besides several other larger piles that will yield one and a-half or two per cent. Four parties of men are stoping as follows: On the first level south of No. 3 shaft, and another on the north; on the second level south of No. 3, and also north about midway between Nos. 3 and 5. In all these stopes the show of copper (as evidenced by the amount taken out) is particularly fine. In the last mentioned stope, just after commencement, there was a thin and somewhat poor bar of ground met with, but it cut out in a few feet, and has looked and yielded well ever since. A party of four men are driving the 20 south of No. 4, to connect with a winze down from the 10. The show of copper is good, and undoubtedly will be so, as the winze was particularly rich. Including the captain, eleven laborers are employed, making the total working force thirty-one men. The cost sheet for the past month was less than $2,000. It is proposed next week to put in two more parties of men and commence sinking Nos. 3 and 4 shafts away to the 30. It is calculated the monthly expense the coming winter will be about $3,000. The captain has about a bushel of rock, containing some of the finest pieces we have seen in some time..... Relative to the Red Jacket boring machine, the same paper says: Mr. Will L. Hulbert reports they are down with the bore a depth of 136 feet, and now progressing at the rate of about six feet a day. The total depth to be bored is variously calculated at from 330 to 412 feet. Mr. Emerson making it the former figure. The Major furnishes us the following record of the work as it progressed:

	Feet.	Inches.
Soil	15	6
Gray trap, soft	5	3
Soft epidotish amygdaloid	35	9
Hard black trap	71	8

An amygdaloid belt has just been reached, and the drill will go down much more rapidly than it did while it was in the trap overlying, which was so hard that but four feet could be bored in a day. By the first of January, however, the drill will certainly have reached and tested the conglomerate, and the owners have had time to determine whether they will bore two or three holes more and open a shaft to begin the work of undermining the Calumet and Hecla. We are informed it is intended to put on an increased force of men some time next month..... At the South Pewabic the four heads of stamps are all in place, and the steam fittings being connected. The other work is well advanced, especially the washers, and the long stone flue up to the smoke-stack on the top of the bluff. At the mine a new large shaft-house is up over No. 2, and will soon be closed in ready for use. ..... It is estimated that the Hancock product for September will be forty-five tons, and that there will be a further increase next month. The mine is looking and yielding well..... Last week the stamps of the Shelden-Combination were delayed several days by an accident to the main engine cylinder..... At the Pewabig mine the show of copper in the amygdaloid belt cut in the hill-side adit, about two weeks since, and about which there has been so much said, is a very moderate one. It is not the Pewabic lode that has been cut there, but a belt having a bare resemblance. According to the surveys, the inner end of the adit is yet one hundred and fifty to two hundred feet from the true line of the Pewabic lode..... The Albany and Boston stamps commenced working Monday last. But twenty-four heads were started and these will be run only in the day for some time, till sufficient rock is accumulated by the stopers..... A big mass for this district, is now being cut in two parts on the seventh level north of No. 8 shaft, Isle Royale mine. We have heard no estimate of its weight, but it must be six or seven tons, or it would not be necessary to cut it.. At the Franklin they are still running one side of the mill and busy putting in new washers. ..... The Ontonagon *Miner*, Sept. 21, says that with a mining force of sixty to sixty-five men, the Evergreen Bluff produces a monthly average of thirty tons. The mine is looking as usual—good..... Knowlton produces some over twenty tons monthly, with a force of forty miners, and is, we understand, looking well, and present indications are, that the mine will continue looking well.

Pennsylvania.

The work in opening the Salisbury copper mines in Salisbury township, as well as in erecting buildings, putting in machinery, etc., is progressing, and the prospects of finding the metal in great abundance is daily growing stronger and stronger, and the certainty of finding it in quantities to pay largely is sufficiently guaranteed by the quantity of mineral taken out in putting down the shafts. A twenty-four horse power engine is now being put up to facilitate mining operations, when work will be started with seventeen men in addition. The old shaft is down ninety-one feet. A number of Philadelphia capitalists are eager to possess themselves of the mines by having it turned into a stock company with $500,000 capital.—*Ex.*

COAL AND IRON.

California and Oregon.

We last week published an account of the first blast furnace erected in Oregon. A San Francisco contemporary has the following in reference thereto, and touching the establishment of similar enterprises in California: The works are to be located on the Walamet, eight miles above Portland. A bed of iron ore has been opened about a mile from the river, and but a few feet below the surface. The deposit of ore is said to be rich and inexhaustible. There is also a heavy growth of timber to furnish a supply of charcoal, and a small stream of water furnishing sufficient power for the blast and other uses. An enterprise having such a combination of advantages, ought and no doubt will be successful. It is the first attempt to fill one of the great blanks in the manufactures of this coast. These works, if successful, can of course only in part supply the local demand in Oregon, leaving the field open as heretofore in this State, which consumes the

bulk of crude iron brought to the coast. A furnace of moderate size ought to turn out 35 tons per week, and should keep in operation three-fourths of the year, producing, say 1,300 tons of pig iron annually. Now it would require from five to seven blast furnaces of this description to supply the annual consumption in California. During the last fiscal year, a fraction over 6,000 tons of pig iron were brought to this port for domestic use; most of which was required for the foundries of this city. Besides, at the beginning of the year, several houses had a heavy stock on hand, and thus the importations were not as large as usual. We do not go wide of the mark to say that from 7,000 to 10,000 tons are required annually to supply the trade of this coast. This amount, it will be borne in mind, is used up in castings, no part going over into the items of bar, round, or other kinds of wrought iron. But already a company has been organized, composed of some of the most enterprising capitalists and business men of this city, for the manufacture of wrought iron. And when sufficient pig iron is produced here to meet the demand, both for castings and for wrought iron, this annual estimate would need at least to be doubled. Here is the market, and not a furnace in the State to supply the first ton. There is also a tariff of $9 per ton on importations of foreign pig iron; which, added to freight charges from any European port, would nearly, if not quite, equal the cost of home production under favorable circumstances. The erection of a blast furnace even so far away as Oregon is, in its relation to a future home supply of iron, a matter of great interest to the people of this State. The initiative has been taken to supply this prime and increasing want. If such an undertaking is a practical thing in Oregon, is it not also in California? We produce our own flour and leather, and have sometimes a surplus for export. Why not produce iron, instead of transporting it 15,000 miles? We have all the requisites for a home supply. But whether any one location can be found combining as many advantages as the one in Oregon, may yet be an open question. There is no lack of iron ore in this State, or of material for charcoal or fluxing. It may require some further search to find these in such combination, and so near to navigable waters or other avenues of transportation, as to secure at once all the needed advantages. But the enterprise and energy which have overcome every obstacle in other departments of manufacturing, are sufficient to establish the production of iron as one of the features of successful industry on this coast.

Pennsylvania.

The Philadelphia *Register* notices the recent boring operations for iron ore on South Mountain, about fourteen miles from Carlisle and says the indications are that there is an immensity of ore on the location. The largest of the pits opened shows ore in the bottom and on all sides, neither wall nor floor having been reached, since excavation to supply the furnaces were commenced. Recently, however with a view to test the depth and area of the deposit, a boring operation was started from the bottom of the pit. To date, one week ago, the explorers had bored down seventy-eight feet, all the time in ore, the ore improving in quality as depth was attained, the progress made in sinking, meanwhile diminishing from day to day, in consequence of the increasing density and compactness of the ore, as bored into downwards. The result disclosed by the boring done to date of last report received, assures *a face of one hundred feet of ore*. And the explorations will be continued till the bottom and the boundaries of the deposit are approximately ascertained. The testimony of trial opening long ago made, together with the geological evidences which abound in the vicinage, warrant the common opinion and belief that the intact and compact deposit of ore is more than a quarter of a mile in width and several miles in length. The ore is exposed in old pits, all in range, for a distance of six miles. The South Mountain Iron company's estate comprises over thirty square miles of territory, extending across Mountain Creek valley and over and beyond the crest of the ridge on either side. It is a spot of singularly romantic fascination in its isolation and seclusion, made so by nature when, in the lap of the deep vale, under a thin apron of alluvion, she stored away an iron pebble which, on a prairie, would make a main summit and water-shed. The proximity of this renowned and magnificent iron ore deposit to Harrisburg and the Susquehanna ore market, and the fact that arrangements are almost matured for breaking ground on the railroad located from Carlisle to the vicinity of the Pine Grove furnace, indicate that Mountain Creek ore will next year add to the supply of the general furnace market. Mountain Creek ore will unquestionably find ready buyers east of the Susquehanna river; and we may remark, *en passant*, that we have heard it said that, whilst it makes neutral iron of excellent quality, it also forms a desirable combination with the magnetic ores of the Cornwall hills in Lebanon county, and with other ores mined elsewhere. The railroad from Carlisle to the ore location will connect with the Cumberland Valley Railroad and pass its tonnage over that integral part of the Susquehanna railroad system.

OIL.

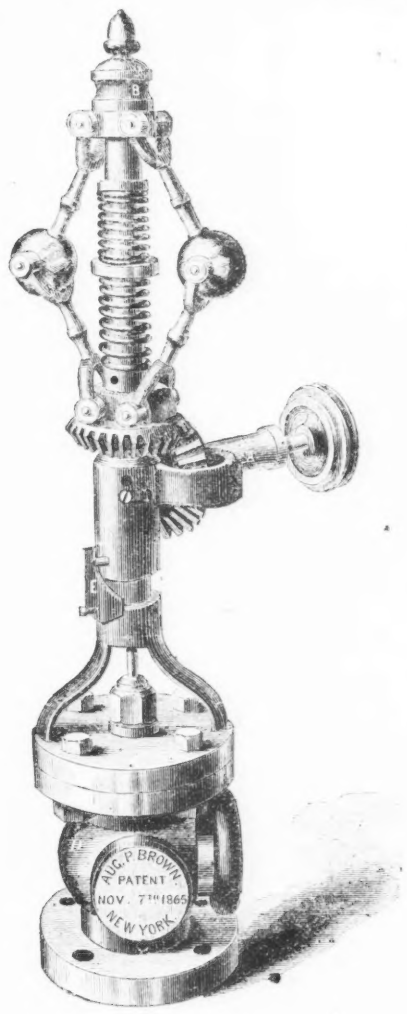
Pennsylvania.

A correspondent of the Boston *Transcript* thus describes the oil operations in Pennsylvania: At Petroleum Centre about one well in six is in operation. From the high hill west of the town you can see half a dozen villages and more than two thousand wells, some new, but many more utterly abandoned. On the top of this hill there is a fine flowing well which yields fifty barrels in a day—the only flowing well in all the region. The pumping wells yield from eight to thirty barrels in a day. A well that yields less than eight barrels will not pay for the working, even at the present advanced prices. The business has now passed entirely out of the hands of speculators, and is conducted in an orderly way by "solid" and intelligent men, and with improved methods. A very intelligent owner of some of the wells explained and illustrated to me all the process of getting the oil—from the first experiment with the auger to the final refining of the crude product; the boring through the various strata, the sand pumps, the seed bag, the casing, the rods which clear out the tube, the gas furnaces—the whole very interesting, but which it would be impossible to explain in the limits of a letter. Hardly any wood is consumed now for fuel. Some of the furnaces are fed by the escaping gas, but more by benzine, of which an ordinary engine furnace burns about a barrel in twenty-four hours. The sparks from a chimney would be dangerous in so explosive an atmosphere. Smoking is strictly prohibited in the neighborhood of the wells. But, as it is, fires are very frequent—hardly a week passes without them. The present high price of oil is stimulating new enterprises, and the owners of wells are encouraged. You see the derricks rising on the tops of the hills, more than three hundred feet above the level of the railway. The gas is carried up the slopes in pipes for half a mile to make fuel for boring these new wells. Not one in three will strike oil at all, and not half of those who strike it will get it in profitable quantity. But the production is still very large, never, on the whole, greater than now. It is said that the famous Noble well, which has now done its work, yielded, before it expired, not less than four hundred and fifty thousand barrels of oil. It was sold for half a million of dollars.

☞ A company has been formed in San Francisco with a capital of $200,000, for the purpose of prospecting and exploring Lower California for mineral lands, water powers, timber lands, harbors, bays, and generally to transact all kinds of business.

BROWN'S PATENT SAFETY GOVERNOR.

Of the many devices now before the public for controling or regulating the steam engine, probably no other is more worthy of attention than the subject of our illustration this week. Aside from the moderate price at which the manufacturers furnish these governors, they are recommended as being comparatively simple and easily kept in perfect working order. They are, moreover, especially recommended for safety, being provided with a simple and effective contrivance, which shuts off the valve in case the belt breaks or slips off the pulley, thereby preventing the occurrence of those serious accidents which are so liable to occur when the governor of a steam engine by any mishaps fails to control or regulate it. The bearing (A) of the driving shaft is movable horizontally and vertically on the inclined plane of the collar (E) which collar can be set by a screw at any point to bring the driving shaft in line with the shaft of the engine. The



combination of these parts is such, that as soon as the belt breaks or ceases to act, the engine is either stopped or retarded by the total or partial closure of the steam valve. The engraving sets forth so plainly the other parts of the governor that particular reference to them is unnecessary. In conclusion we will state that the manufacturers warrant their governor to give complete satisfaction, and as a pledge of their faith in them as being sensitive and safe, they propose, after a fair trial, should they fail to please, that they may be returned to them and the money will be refunded. Address for further particulars, "Progress Machine Works," A. & F. Brown & Co., proprietors, 57, 59, and 61 Lewis street, New York. These governors are now on exhibition at the fair of the American Institute.

Separating Silver from Lead by Electricity.

The improved mode of separating silver from lead which we are about to describe, relates to the application of electricity to the molten lead, with which a small quantity of zinc has been incorporated. The process has been patented by Mr. W. G. Blagden, of Hackney Wick. The operations may be carried on in a pot similar to those used in the method of separating silver from lead by crystallization, known as Pattinson's process. Before the lead is conveyed into the pot it may (if requisite) be placed in a reverberatory furnace, and there be submitted to a preliminary refining process, which may be conducted in the ordinary way. The object of this preliminary refining process is to remove by oxidation any portions of copper, antimony, arsenic, or other matters that the lead may contain; but in some cases where the lead contains no other impurities than a little dross, the operation may be dispensed with altogether. Under ordinary circumstances the average duration of the process is about twelve hours. From this reverberatory furnace the lead may be run or otherwise conveyed into the before-mentioned pot, which has been previously heated to prevent the lead from cooling, or to facilitate its melting. The temperature of the lead is then brought, to say, about 430° Reaumur, in order that the zinc to be subsequently added to it may melt it. Practically, the temperature may be considered about right when it is impossible to keep the hand at a distance of 2½ ft. from the molten metal. The molten metal is then skimmed, and the dross thus removed may be treated in a reverberatory furnace with the next charge of lead, which undergoes a preliminary refining process. The object of this skimming is to remove all the impurities still retained by the lead; the dross will be treated again in order to extract the lead that is mixed with it mechanically. A quantity of zinc equal to about 1-3 to ½ per cent. of the charge of lead in the pot is now introduced into the molten lead by means of a suitable instrument, and the whole is then thoroughly and carefully stirred until the mass is well mixed. The instrument found best adapted for this purpose is a ladle provided with a cover and a long handle, and perforated with a number of small holes; this ladle containing a quantity of zinc, is placed in the molten metal, where it is allowed to remain till all the zinc has melted and passed through the small holes. The metal may be stirred by means of this ladle or other stirrers; if the mixture of the metals is not complete, the zinc will separate in lumps instead of forming a crust on the surface. An electric current, which may be generated by a suitable battery, in connection with one of "Rhumkorff's" coils, or otherwise, is caused to pass through the molten metal; this current, which produces among other effects in most cases a certain tremor in the mass of metal, is continued for a period varying from ten to thirty minutes, according to the quantity and purity of the lead under treatment, and to the proportion of silver it contains. The conductors used are rods of copper with wooden handles; two, four, six, or eight of these conductors may be suspended in the metal in any convenient manner; the current should be continued until all the zinc has reached the surface, when it ceases to have any action on the desilverizing of the lead. Towards the close of this operation it is advisable to begin to reduce the fire under the pot, in order to facilitate the solidification and separation of the alloy of zinc and other metals or impurities which are being formed. After the conductors of the electric current have been withdrawn from the molten metal, it is allowed to remain at rest and to cool for about a quarter of an hour, and the crust, which, in the mean time, has formed on the surface of the metal, is then removed. By reducing the temperature in this way, the alloy of zinc becomes solid, and separates itself more readily from the masses of molten lead. The temperature found desirable for removing the crust is between 360 deg. and 370 deg. Reaumur, or when the metal has become solid round the sides of the pot to the extent of about ½ in. In removing the crust from the surface, a certain quantity of lead is always carried away, too; but this is easily recovered in the subsequent treatment of the alloy; the temperature of the metal is now raised to say 430 deg. Reaumur, and the operation of introducing from about ½ to ½ per cent. of zinc, followed by the application of the electric current, and the removal of the crust, is repeated in the manner already indicated. When the lead under treatment is very impure, or contains a large proportion of silver, it may be necessary to repeat this process a third or more times, in order to desilverize the lead sufficiently. It is found desirable from time to time to make an assay of the metal in the ordinary way, with a view to ascertain what quantity of zinc, if any, it may be requisite to add to it, or whether the lead is desilverized to the required degree, say at least 1–500th per cent. The silver, which is contained in the various crusts or skimmings taken from the molten metal after each addition of zinc, and passage of the electric current, may be recovered by any of the ordinary methods. The lead, when sufficiently desilverized, is conveyed to a reverberatory furnace, which has been previously heated, and there undergoes a refining or annealing process, in order to remove the zinc, and other impurities which it has retained. The process lasts about three hours, and it is desirable to carry it on with a brisk flame. Thus purified, the lead may be run into ingots for sale.—*London Mechanics' Magazine.*

Three Mastodons Discovered.

Not long ago, a farmer in Hunterdon, Indiana, about sixteen miles north of Fort Wayne, found in a low and swampy place on his farm, a quantity of huge bones, of which, being no naturalist, he took no further notice than to drive a stake to mark the spot. Dr. Stimpson, the curator of the Chicago Academy of Sciences, hearing of the circumstances, proceeded to the spot and obtained the farmer's permission to dig. He then began his work of discovery. After digging down some five feet, he came across the huge remains imbedded in the earth. Bone after bone was taken out; a skull, four feet in length, was found, and the work was carried on vigorously.—The remains of three mastodons, a male, a female, and a calf, have been discovered in an excellent state of preservation. The other day three team loads of the bones were taken to Fort Wayne, thence to be conveyed to Chicago. One of the thigh bones in size convey some idea of its former owner. It is about four feet in length, and four inches in diameter. Dr. Stimpson estimates that the animal to which it belonged must have been at least seventeen feet in length, and fifteen feet in height. The remains are supposed to be at least 3000 years old—a supposition based by Dr. Stimpson, upon the usual methods of determining the age and character of discoveries in natural sciences. The remains will form part of the collection of curiosities in the Bureau of the Academy of Sciences at Chicago.—*Elmira (N. Y.) Gazette, Oct.* 10.

☞ Arago, the celebrated French astronomer, wrote the following: "The temple of the Jews at Jerusalem existed for a period of 1,000 years; for the temple of Solomon existed nearly four hundred years, and the second temple about six hundred years. This temple was by its situation, more particularly exposed to the very frequent and violent thunder-storms in Palestine. Nevertheless, neither the Bible nor Josephus mentions that it was ever struck by lightning. The cause of this is very simple. By a fortuitous circumstance, the Temple of Jerusalem was provided with a lightning-conductor, which came very near that discovered by Franklin, and used by us. The roof of the temple, similar to those found in Italy, was covered with thickly gilt wood. Lastly, beneath the fore court of the temple, there were cisterns into which flowed the water coming from the roof by means of metal pipes. Here we find such a multitude of lightning-conductors, that Leichtenberg was right when he maintained that the mechanism of the like constructions in our days is far from presenting an apparatus so well adapted to produce the desired effect."—*Hebrew Observer.*

☞ In a Leipzig paper we read that that city is on the point of adding to her numerous institutions of learning one which, as yet, is a rarity in any part of the world. Dr. Fieberg, first teacher in the Nicolai School, intends to establish a school for waiters. In his prospectus he points to the necessity of a higher education for men of this profession, pronouncing an intelligent, moral and socially educated waiter a perfect treasure to any hotel or house—his opposite a great infliction to his employer and the public generally. The lessons to be given at the school are caligraphy (for bills of fare, accounts, bills, etc.,) bookkeeping, grammar and correspondence, practical arithmetic, and instruction in a knowledge of foreign coins, and in the French and English languages.

☞ The immigration to Minnesota this year is immense. Three hundred and fifty wagons have passed over the bridge at St. Paul since April, with two thousand persons. Thousands have gone by rail and steamer. It is estimated that in the Sauk Valley alone, 10,000 persons have settled; and still they come. The average at Winona, of immigrants passing to the back country at one time, was 700 per day. So says the Minneapolis *Tribune.*

MARKET REVIEW.

FRIDAY EVENING.

Gold and Silver Stocks.—At the mining board to-day sales were made as follows: Rocky Mountain, 40c; Seaver, $11 @5; Texas, 05; Smith & Parmelee, $3 95@4 25; Sensenderfer, b 3, $9 10@9 95. At Second Call Consolidated Gregory sold regular at $5 40, and Quartz Hill, $1 25.

	Bid.	Asked.		Bid.	Asked.
Kipp & Buell Gold	—	—	Hope Gold	—	40
Alameda Silver	39	1 00	La Crosse Gold	40	60
American Flag	—	85	Liberty Gold	—	7
Atlantic and Pacific	25	1 25	Manhattan	—	150 00
Bates & Baxter Gold	—	1 00	Midas Silver	50	2 50
Benton Gold	55	65	Montana Gold	11	17
Bobtail Gold	—	3 00	New York	65	80
Bullion Consolidated	—	1 00	New York & Eld'o	—	3 75
Columbian G. & S.	4	10	Nye Gold	—	5
Combination Silver	35 00	35 00	Owyhee Mining	—	30 00
Consolidated Gregory	5 30	5 50	People's G. & S. of Cal	—	15 40
Corydon	60	70	Quartz Hill	1 25	1 35
Edgehill Mining	4 00	4 75	Reynolds Gold	—	4
Gold Hill	—	4 00	Rocky Mountain Gold	30	40
Gunnell Gold	1 00	1 35	Seaver Gold	11 85	12 00
Gunnell Union	—	40	Smith & Parmelee Gold	3 80	3 95
H'n G. & S. bs	—	190	Sensenderfer	9 80	9 95
Harmon G. & S. bs	—	9 75	Symonds Fork Gold	—	1 00
Holman	—	12	Texas Gold	—	8

Copper Stocks.—Davidson sold regular at $1 40

	Bid.	Asked.		Bid.	Asked.
Caledonia	....	10 00	Hilton	....	1 00
Canada	....	50	Isle Royale	....	6 00
Central	26 00	....	Knowlton	....	4 00
Charter Oak	....	3 00	Mendota	....	4 00
Davidson	1 00	1 60	Minnesota	....	....
Evergreen Bluff	....	5 00	Ogima	50	....
Gardner Hill	1 25	1 75	Rockland	6 50	8 00

Petroleum Stocks.—New York & Allegany sold regular at $3, Rynd Farm 15c.

	Bid.	Ask'd.		Bid.	Ask'd.
Peacehell Run	$4 00	4 15	N. Y. and Alleghany	2 80	3 00
Buchanan Farm	42	45	Pit Hole Creek	25	50
Brevoort	55	75	Rynd Farm	15	16
Central	75	1 00	United Pet. Farms	10	....
Clinton Oil	1 20	1 45	United States	2 75	3 50
Excelsior	....	15	Union	1 20	....
Manhattan	....	15			

Miscellaneous Stocks.—Quicksilver M. 25c; Mariposa M. 9c; same pref. 17; Pacific Mail Steamship Co. 142½; Del. & H. Canal 148; Reading R. 1015-8 to ¾; Ruthied Marble, $11; Waikull Lead, 25c; New York Central, 114 5-8; Erie, 70½; Hudson River, 127; Reading, 101 5-8; Michigan Southern, 87½; Illinois Central, 122; Pittsburgh, 82½; Northwestern, 43½; Northwestern pref. 67¼; Toledo, 131½; Adams' Express, 62½@62¾; American Express, 62; United States Express, 62½@63; Wells, Fargo & Co.'s Express, 56@56½; Merchants Union Express 25 p c., 23@24

Government Stocks.—Considerable excitement has prevailed in the Treasury Department for several days past on account of the discovery of the counterfeiting of United States bonds. Seventy thousand dollars in well executed counterfeited Seven-thirty bonds, of the second series, due June, 1868, of the one thousand dollar denomination, had been presented to the Treasury Department for redemption. All of them were either of the A or B series, ranging within the following named thousands, viz: 68,000, 140,000, 160,000, and 180,000. The number of parties discovered to be in possession of the spurious notes increases, and it may be safely estimated that about $125,000 are in the hands of brokers, banks, and financial institutions. It is not yet ascertained what amount is in the hands of the Treasury, but all held by the Department were received in September, so far as yet ascertained. The Treasury holds that it has a claim for recovery upon the parties from whom it received the notes; but the brokers maintain that the Department has no more claim than has a bank which pays a forged check upon the party presenting it. The question will probably have to be brought to a legal issue. Among the dealers there appears to be some considerable doubt as to whether the notes are counterfeits or over issues; and that question will, of course, have to be settled before the Government undertakes to make any claim upon the parties from whom it has taken them.

The Market is unsettled, and little business is doing. The Seven Thirties are firm at a slight advance from the lowest prices of yesterday afternoon, when there was some pressure to sell in consequence of exaggerated rumors relative to the alleged forgeries. Ten-forties are a fraction lower, and the speculative movements in them have quite disappeared. For the Five-twenties there is little inquiry.

The following were the quotations at the first and second calls to-day:

U. S. 6s, 1867 ..... 143⅞@—
U. S. 6s, 1881, regular ..... 111 @111½
U. S. 6s, 1881, coupon ..... 111⅝@111¾
U. S. 6s, 5-20s, 1862, regular ..... — @104½
U. S. 6s, 5-20s, 1862, coupon ..... 112⅜@112⅝
U. S. 6s, 5-20s, 1864, coupon ..... 108⅞@109
U. S. 6s, 5-20s, 1865, coupon ..... 109½@109¾
U. S. 6s, 5-20s, reg. July, 1865 ..... 107 @107½
U. S. 6s, 5-20s, July, 1867, coupon ..... 107 @107⅛
U. S. 7s, 1881, reg. ..... 115 @116
U. S. 5s, 1874, coup ..... 111 @112
U. S. 10-40s, regular ..... 100½@100⅝
U. S. 10-40s, coupon ..... 100½@100⅝
U. S. 7-30s, June, large ..... 105⅜@105⅝
U. S. 7-30s, July, large ..... 105 @105⅛

Foreign Exchange is dull. There is very little demand from the importers, while the supply of grain and other produce paper is on the increase. Very few bills against Five-twenties are on the market. Some of the leading drawers quote 60 days' sterling at 109½, but transactions in prime bills are quoted ⅛@⅛ below that figure. The following are the current rates:

London, (prime bankers') 60 days' ..... 109½@109⅝
London, (prime bankers') sight ..... 109⅞@109¾
London, prime commercial ..... 108½@108¾
Paris, (bankers') long ..... 5.18¾ @5.17½
Paris, (bankers') short ..... 5.16¼@5.15
Antwerp ..... 5.20 @5.17½
Swiss ..... 5.20 @5.17½
Hamburg (bankers') ..... 35½@35⅝
Amsterdam (bankers') ..... 40⅞@41
Frankfort (bankers') ..... 40⅛@40⅜
Bremen (bankers') ..... 78⅜@78⅝
Berlin (bankers') ..... 71¼@71⅜

Gold is firm, at 145⅛@⅜. The prospect of the payment of the November coupons is being freely discounted, and the more pacific aspect of the Italian question has a tendency to check speculative purchases. Money is in active demand, and the banks readily employ their balances at 7 per cent. on stocks and Government alike. A dispatch, dated Sept 30th, from San Francisco notes the arrival of the steamer California, from Victoria, with $30,000 in gold, and the Sierra Nevada, from Portland, with $140,000. Also the sailing of the Pacific mail steamer Golden Age, for Panama with 236 passengers and $755,255 in treasure, $395,000 of which is for New York.

Copper.—There has been little business doing the past week. The market has declined to 25@25¼ for Portage Lake. It is as difficult to buy as it is to sell.

Tin.—A lot of 1200 lbs. Straits on private terms is reported. The quotations are 26c. for straits, 27 for Banca, and 23¼ for English. The latest quotation from England is 91s for Straits.

Spelter 6½c. gold, without wholesale business.

Lead. 6½c. gold, without wholesale business.

Pig Iron is dull at $42@44 for Scotch Pig, according to quality. American No. 1 $44.

Petroleum is in good demand and firm. The quotations are as follows: Crude (40@47 gravity) in bulk per gallon, 16@17c.; Crude do., in barrels, 21@21½c.; refined in bond, (110 to 0) prime light straw to white, 53@54½c., do. do. standard white, 50½@53c.; do. do. prime white, 36@36½c.; refined naptha (90@83 gravity), 29@26c.; Residium, per barrel, $3@3 62½. The Atlantic cable reports: Liverpool, Oct. 10, noon.—Spirits of petroleum, 1s. 1d. and standard white, 1s. 6d. Antwerp, Oct. 10, noon—Petroleum, 58 francs for standard white.

THE IRON TRADE.

Domestic.—There is but little change in the market this week. Prices are pretty steady, but no very large trade has been realized or can be expected. Very little has been done in Pig. Best Anthracite No. 1 maintains the same price, but No. 2 is rather scarce, bringing $40@42. Scotch Pig is in demand at $42@44. We notice in the early portion of the week a sale of 1,000 No. 1 Crane. In Rails the market is very quiet, with no large sales, except, perhaps, 1,000 tons delivered at Nashville at $90. There have been no cash offers for new rails. Holders are firm. Old rails are scarce, and in fair demand. The demand in manufactured iron is moderate, prices ruling steady.

Foreign.—The iron trade business of Great Britain is now more lively and the business transaction more frequent. In the Northeastern district the condition is unsatisfactory, and, as far as prices go, is in a bad position. The cheapness of the iron does not increase the demand, whilst the wages paid are so out of proportion to the selling price that profits are rendered impossible. The rail mills are more fully occupied than are the plate and bar mills.

The pig-iron trade of Cleveland has experienced a change for the better, though the Continental demand has slackened.

In the Birmingham vicinity the trade continues very dull, three-fourths of the makers being glad enough to obtain at five shillings per ton below the sale price. For pig-iron the demand is everywhere better. The complaints about the lowness of prices continues in some of the districts.

WEEKLY STATEMENT OF NEW YORK IMPORTS.

The following table shows the quantity and value of iron imports at the New York Custom House for the week ending and including October 4th, 1867:

	QUANTITY.	VALUE.
Iron, Hp., tons	241	$9,772
Iron, Pig, tons	1,865	50,449
Iron, R. R., bars	7,147	56,220
Iron, Sheet, tons	872	120,328
Iron, Tubes	522	2,551
Iron, other, tons	1,180	49,475
		$254,775

Monthly Statement of Iron Imports.

The following table shows the imports of iron at New York for the month of September, 1867:

	Foreign.	Coastwise.	Total.
Bar, tons	1,182	192	1,374
Pig, tons	6,270	44	6,314
Sheet, bdls	41,712	5,895	47,607

Quarterly Statement of Imports of Iron at New York.

The following table shows the quantity and value of iron imports at New York for the third quarter of 1867, ending Oct. 1st:

	QUANTITY.	VALUE.
Iron, Hp. tons	1,108	$50,379
Iron, Pig, tons	12,658	189,807
Iron, R. R., brs	117,970	648,786
Iron, Sheet, tons	2,400	147,702
Iron Tubes	1,130	5,916
Iron, other, tons	17,229	627,140

Comparative Statement of Iron Imports at New York.

In the subjoined table a comparative quarterly statement is exhibited of the imports of iron. These values represent only the foreign cost in gold, freight and duty unpaid:

	1865.	1866.	1867.
Iron, bar	$277,331	$189,161	$127,140
Iron, pig	91,850	143,062	189,807
Iron, railroad bars	574,235	393,159	648,590
Iron, sheet	44,526	208,731	147,702

Imports of Iron from Jan. 1st to Sept. 30, 1867.

The following table shows the imports of Iron at New York from Jan. 1st to Sept. 30, 1867, exhibiting the contrast for the same period of 1866:

	Foreign.	Coastwise.	Total. 1867.	Total. 1866.
Bar, tons	12,654	1,821	14,475	19,957
Pig, tons	41,758	1,269	43,027	43,288
Sheet	337,456	40,325	377,781	307,959

BOSTON IMPORTS OF PIG IRON FROM JAN. 1st TO OCT. 5th, 1867.

	1867.	1866.
From Great Britain, tons	25,921	17,874
Coastwise ports	7,352	19,460

Marquette, Michigan, Iron Trade.

The following are the receipts of ore and pig iron at Marquette up to, and including Saturday, October 5, 1867:

IRON ORE.

	Week.	Total.
Pitts. & L. Aug. I'n Co.	1,373	48,408
Edwards' Mine	....	3,631
Cleveland Iron Co	1,017	33,541
Marquette Iron Co	60	5,416
Lake Sup. Iron Co	2,071	96,261
New England Iron Co.	216	8,516
Washington Iron Co	612	20,589
Jackson Iron Co	....	139
Ore to local furnaces	1,161	20,450
Total iron ore	6,630	236,886

PIG IRON.

	Week.	Total.
Morgan I'n Co	131	4,626
Greenwood Iron Co	....	4,506
Bancroft Iron Co	132	2,351
Collins Iron Co	175	3,843
Michigan Iron Co	161	3,805
Iron Cliffs Co	....	57
Total, pig iron	599	19,278
Total Ore and Pig	7,229	256,163

SAN FRANCISCO IMPORTS OF IRON FROM SEPT. 8th TO SEPT. 17th, 1867.

Sheet, bxs	20
" pcs	144
Bar, pcs	16,347
" bdls	2,985
Ass. Pig, tons	123
Fog Pig, tons	245
Hoop, bdls	80
Tubes, no	316
Safes, no	14
Plates, no	50
Pipe, bdls	276
Bars, R. R., no	1,252
Various, pkgs	196
Rod & pcs	78

SAN FRANCISCO IMPORTS OF IRON FROM SEPT. 1st TO SEPT. 16th, 1867.

Iron, Pig, tons	408
" Bar, bars	16,605
" " bdls	3,819
" Pipe, pcs	693
" " bdls	389
" Sheet, cs	20
" Hoop, bdls	892
" Plate, pkgs	20
" R. R. Bars, no	463

Shipments of Iron to the United States from Liverpool.

The following are the shipments of iron to the United States from the port of Liverpool, for the week ending Sept. 21st, 1867:

CHAINS AND ANCHORS.—Baltimore, four tons chains; Boston, six tons chains; Mobile, five tons chains; New Orleans, three tons chains; New York, fifty-three tons chains.

IRON, BAR AND ROLL, TONS.—Boston, 432; Charleston, 3; New Orleans, 2; New York, 103; Philadelphia, 14; San Francisco, 32.

IRON CASTINGS, TONS.—New York 4.

IRON, HOOP, TONS.—Baltimore, 16; Boston, 19; Charleston, 7; New Orleans, 192; New York, 50; Philadelphia, 4; San Francisco, 4.

IRON, NAILS.—Boston, 4 casks 55 kgs.

IRON, PIG, TONS.—Boston, 100; New York, 1,058.

IRON, PLATE, TONS.—Boston, 10; New York, 10.

IRON, ROD, TONS.—New York, 57.

IRON, SHEET.—Boston, 71; Charleston, 5; Mobile, 4; New York, 85; San Francisco, 113.

IRON WIRE, TONS.—Mobile, 2.

Market Prices.

NEW YORK, Oct. 11, 1867.

DUTY.—Bars, 1 to 1½c. per lb.; railroad, 60c. per 100 lbs.; boiler and plate, 1½c. per lb.; sheet, band, hoop and scroll, 1¼ to 1¾c. per lb.; pig, $9 per ton; polished sheet, 3c. per lb. Payable in gold.

Anthracite, No. 1, best	$44 00@45 00
" 2x, Elry	40 00 42 00
" Grey Forge	35 00 38 00
Scotch Pig, from vessel	42 00 44 00
Charcoal, coal blast	50 00 67 00
Old Wrought scrap, tn yd	50 ....
" " " fun. yd	47 50 ....
English rails, gold	52 50 53 00
American " at works	78 00 80 00
Nails and spikes	5 75 ....
Old Railroad Iron	49 50@50 00
Hoops, ¾ per ton	$190 00
" ¼ "	160 00
" ⅜ "	150 00
" ½ "	140 00
" ⅝ "	137 50
" 1¼ to 2 per ton	137 50
Scroll Iron—¾x14 per ton	180 00
" 12 "	170 00
" 10 "	160 00
" 5-16 "	150 00
" ¼ "	140 00
" ⅜x14 "	160 00
" 12 "	160 00
" 10 "	150 00
" 5-16 "	140 00
" ¼ "	135 00
" ⅜x14 "	150 00
" 12 "	150 00
" 10 "	140 00
" 5-16 "	135 00
" ¼ "	132 50
Swed'h I'n, ord'y sizes, ¾ to 2 in. sq., per ton	155 00
1¼x¾ to ⅝ and ¾ in sq	160 00
1¼x¾ to ⅝	165 00
6 to 12x¾ to 5-8	165 00
Common Iron	
¼ to 2 in. round and sq	95 00
1 to 6 in. wide by ⅜ to 1 th	95 00
1 to 6 in. wide x¼ to 5-16 th	105 00
½, 9-16, 5-8, 11-16, r'd & sq	105 00
2½ to 5 inches	105 00
Refined Iron	
¼ to 2 in. r'd and sq	100 00
1 to 6 in. wide x ⅜ to 1 th	100 00
2¼ and 2½, round and sq	115 00
Rods—5-8 and 11-16, round & sq., per ton	105 00
½ and 9-16 round & square	110 00
7-16, round and square	120 00
⅜ " "	125 00
5-16 " "	130 00
¼ " "	135 00
3-16 " "	165 00
Horse Shoe Iron	127 50
Band—1 to 6 in. x 3-16 to No. 10	132 50
1 to 6 in. x No. 11 and 12	132 50
Ovals and half Rounds.	
¾ to 1⅜	127 50
⅝ & 11-16	132 50
½ & 9-16	137 50
Nail Rods, per lb.	
"	9@10½
Norway Shapes	8½
Spring Steel	10½
Tire " ⅞ to 1½x¾ & 5-16	10½
Toe Cork Steel	10½
Sleigh Shoe Steel	10½
Plow Steel—6 to 14x¼ to ⅜	11c

[From Boston Shipping List.]

BOSTON, Oct. 9, 1867.

Swedish—common ass'd	$150@155
English—com	95 100
do refined	105 110
do sheet, per lb	6½@10c.
Russia, sheet	19@20c
Scotch Pig, No. 1	....
Gartsherrie	$45@46
No. 1, other brands	43 45
American, No. 1	42 48

[Specially furnished by Addy, Hull & Co.]

CINCINNATI, Oct. 9, 1867.

PIG.—The receipts of pig metal continue very light, but the demand is only moderate, and there is no scarcity. The foundries are the chief purchasers, the rolling mills not being in the market to any considerable extent.

	Cash per ton.
Hanging Rock H. B. Foundry	$47@50
" " Mill	45 46
" Cold Blast	58
" Car Wheel	60
Tennessee, Cold Blast	$50@51
Missouri	52 55
Jackson (stonecoal) Foundry	46 48
Blooms	110 125

MANUFACTURED.—The market presents no new features since our last report. The mills are still idle, and trade continues dull.

	B.	C. C.
Flat Bar	4½ to 5½	6 to 6½
Horseshoe Iron	6¼ " 6½	7½ " 8
Heavy Band	5½ " 5⅞	6½ " 7
Round and Square	4¾ " 8¾	6 " 10
Saddle-tree	6 " 6¼	7½ " 8
Hoop and Light Band	6 " 10½	7½ " 11⅛
Oval Iron	5½ " 6	6½ " 7¼
Half Oval and Half Round	5½ " 6¼	6⅝ " 7½
Angle Iron	6¼ " 7¼	7½ " 8½
T and Hollow Rail Iron	6½	8
Saw-mill Track	6¾	8
Sheet Iron, 10 to 17	6	9
" 27	7	10
Boiler Plate 3-16 to 5-16	—	8

LONDON, Sept. 21, 1867.

(From the London *Mining Journal*.)

Bars, Welsh in Lond.	£6 10 0@....	Do. railway, Wales	£5 10 0@6 0 0
Ditto to arrive	6 10 0	Do. merch Tyne or Tees	6 10 0 ....
Nail rods	7 0 0 7 10 0	To arrive	10 5 0 ....
" Stafford in Lond.	7 10 0 8 10 0	Pig, No. 1, in Clyde	2 15 3 3 2 0
Bars	7 10 0 9 10 0	Do. f.o.b. Tyne, Tees	2 9 6 ....
Hoop	8 10 0 9 12 6	Sheets, single	9 5 0 10 0 0
Sheets, single	9 5 0 10 0 0	Do. Nos 3, 4, f.o.b. do	2 6 6 2 7 0
Pig, No. 1, in Wales	3 15 0 4 5 0	Railway chairs	5 10 0 5 15 0
Refined metal, ditto	4 0 0 5 0 0	" spikes	11 0 0 12 0 0
Bars, common, ditto	5 15 0 6 0 0	Indian Charcoal Pigs in London	7 0 0 7 10 0
Do. Swd. in London	10 5 0 10 10 0		

THE SLATE TRADE.

NEW YORK, Oct. 11, 1867.

PRICES of Roofing Slates remain unchanged, but as usual at this season of the year, the dealers find it difficult to get transportation from the quarries fast enough to supply the largely increased demand.

Vermont purple,	1st quality, per	square		$11 00@12 00
" "	2d	"		10 00@11 00
" green,	1st	"		11 50@12 50
" "	2d	"		10 50@11 50
" red,	1st	"		12 50@13 50
" "	2d	"		11 50@12 50
Pa. blk & d'k blue,	1st	"		10 50@11 50
" "	2d	"		9 50@10 50

PRICES DELIVERED. PER SQUARE

On cars or boat at Buffalo	$11 00 per square.
Delivered in Cleveland	12 50 "
" Dayton	13 00 "
" Cincinnati	13 50 "
" Indianapolis	13 50 "
" Chicago	14 50 "
" St. Louis	14 00 "
" Louisville	14 00 "
" Detroit and Toledo	12 75 "

Intermediate, 75 cents per square less.
Red, $4 per square more.
New York Red, same as Purple.
NEW ORLEANS.—$19@20 per square.
CHARLESTON, S. C.—$15@16 per square.

ALABAMA SLATE.—It is but little known, even by the people of our own State, to what extent slate, of the very finest texture, exists in Alabama. We make the assertion, without the least fear of successful contradiction, that there is slate enough in Shelby county alone to shingle over forty millions of houses, one hundred feet square. Large quantities of slate are to be found on the surface, almost in every branch in Shelby county. There is not a single instance where any effort is made to work this valuable material in Shelby county. Shelby is not the only county in Alabama where slate, in the greatest abundance, is to be found. In Jefferson, St. Clair, Talladega, Blount, Fayette and Calhoun, slate, in large quantities, is to be found. In Calhoun county there is a company of gentlemen now at work getting out roofing slate, and are actually shipping large quantities to New York, where they find remunerative prices. We hope the day is not far distant when we will see crowds of men engaged in getting and preparing this material in our State, for building and all other purposes.—[Montgomery State Sentinel.

THE COAL TRADE.

NEW YORK, Oct. 11, 1867.

Domestic.—The general market this week is unchanged, with no noticeable improvement. The wholesale trade is dull; but the retail is very brisk. In the latter a large business is being done, though prices are still the same.

The smaller sizes of coal are in some demand. The larger sizes are in better demand for steamboats. There is little or no stove coal in the market just now. The present week's demand has been better than for the past month.

English coal is scarce and in good demand. The present stock is deemed insufficient. In Provincial coal little has been done. The arrivals have been very few.

Freights are changing. We notice an advance from Port Richmond.

Foreign.—The coal trade of England exhibits no peculiar feature for the week ending 28th ult. The coal shipping trade for the northeastern ports continues steady. The London trade is said to be somewhat brisker, as dealers are now laying in their stock for the winter.

The following Table shows the quantity of Coal shipped over the principal roads for the week ending Oct. 5th, 1867, compared with that shipped the same time last year.

	1866. WEEK.	1866. TOTAL.	1867. WEEK.	1867. TOTAL.	DECREASE.
Phil. & Reading R.R.	42,972	2,979,535	67,869	2,573,807	405,728
Schuylkill Canal	19,544	1,047,929	29,544	761,611	286,318
Lehigh Val. R. R.	31,421	1,460,422	40,407	1,580,157	.....
Lehigh Canal	35,4.0	805,910	33,110	734,028	.....
Del. & Hudson	30,389	1,041,428	40,0.2	1,038,804	2,624
Union Coal Co. Rail	130	705	.....	7,652	6,949
" " " Canal	.....	1,270	2,772	21,225	19,496
Scranton North	8,695	326,162	14,352	351,174	25,014
Scranton South	21,720	818,089	22,986	970,956	152,867
Penn'a Coal Co. Rail	19,802	314,775	19,894	630,997	316,222
" " Canal	707	19,810	587.	17,381	2,425
Wyoming North	.....	87,721	.....	85,196	52,528
Wyoming South	19,861	372,115	14,587	260,031	112,084
Shamokin	7,435	433,806	.....	342,944	90,922
Trevorton	837	42,276	1,524	40,158	2,158
Short Mountain	2,487	78,468	1,928	53,198	25,269
L. V. Co	.....	26,202	.....	33,402	7,140
Broad Top	6,975	212,319	4,507	179,733	32,585
Williamsto'n	.....	49,209	3,212	88,951	39,742
Total	245,375	10,132,678	297,295	9,721,874	.....
1867	.....	9,721,874	.....	.....	.....
Decrease	.....	410,804	.....	.....	.....

Lehigh and Mahanoy Coal Trade,

For week ending Oct. 5, 1867.

NAMES OF SHIPPERS.	WEEK.	TOTAL.
Trenton Coal Co	.....	1,794 02
Mount Etna	467 00	2,559 13
Mahanoy Coal Co	.....	10,813 00
Delano Colliery	.....	85,091 02
Glendon Coal Co	252 14	13,421 02
Rathburn, Stearns & Co	.....	25,431 01
E. S. Silliman	2,279 08	85,577 18
McNeal Coal & Iron Co	2,220 11	79,974 00
Knickerbocker Coal Co	1,061 13	43,388 14
Thomas Coal Co	782 11	26,143 02
Williams & Herring	267 11	9,578 11
Shamokin Valley Coal Co	.....	4,202 06
New Boston	1,062 11	20,616 03
Caledonia	78 11	78 11
Other shippers	.....	26 17
Total	8,477 10	358,777 01
Corresponding week last year	3,188 08	281,076 05
Increase	5,289 02	77,700 16
Decrease	.....	.....

Lehigh Coal Trade.

SHIPPED FOR THE WEEK ENDING OCTOBER 5, 1867.

SHIPPERS.	CANAL. Week. Tons.	CANAL. Total. Tons.	RAILROAD. Week Tons.	RAILROAD. Total Tons.
FROM MAUCH CHUNK.				
Lehigh Coal & Navigation Co.	....	....	....	....
Summit Mines	12,357	264,509	....	....
Room Run Mines	....	1,313	....	....
John Laubach & Co.	....	352	....	....
Other Shippers	....	....	....	....
Total	12,367	266,175	....	....
FROM B. M. REGION.				
John Connery	....	....	....	1,534
W. T. Carter & Co. (Colcraine)	755	10,518	1,880	69,125
Spring Mountain Coal Co.	283	4,565	2,287	107,423
Thomas Hull & Co. (N. Y. & Lehigh Co.)	592	9,010	2,211	80,508
Honey Brook Coal Co.	2,067	30,628	2,376	107,695
German Pennsylvania Coal Co.	225	7,425	1,173	30,244
Beaver Meadow (D. W.)	....	....	52	1,450
Other Shippers	....	....	21	159
Total	3,934	61,946	10,012	398,142
FROM MAHANOY REGION.				
McNeal Coal and Iron Co	75	4,326	2,156	75,926
Knickerbocker Authr. Coal Co.	81	1,495	1,067	41,875
North Mahany Mines (Mahanoy Col. now R. & C.)	....	825	....	10,668
Delano do	....	1,140	....	33,872
Primrose Mines (Rathbun, Stearns & Co.)	....	....	....	25,625
Walter, Brothers & Co. (now Bedford & Cox)	....	82	....	....
Mount Etna Coal Co.	282	1,212	139	1,199
Trenton Coal Co.	....	184	....	1,609
Glendon Coal Co. (Glendon Colliery)	95	95	156	13,401
Thomas Coal Co.	83	1,405	688	25,020
Williams & Herring	....	189	267	9,701
E. S Silliman	....	....	1,724	83,980
East Boston	....	....	....	505
New Boston Coal Co.	....	....	1,062	20,356
Shamokin Coal Co.	....	....	....	4,202
Other Shippers	....	....	78	195
Total	535	10,755	7,333	348,341
FROM HAZLETON REGION.				
A. Pardee & Co. (Hazleton)	2,199	57,811	2,878	106,603
G. B. Markle & Co. (Jeddo)	1,391	41,608	2,165	94,554
Wm. S. Halsey & Co. (Mt. Pleasant)	69	3,560	492	7,985
Buck Mountain Coal Co.	1,139	32,805	1,890	43,108
Sharpe, Weiss & Co. (Council Ridge)	753	26,145	1,499	59,435
Coxe, Brothers & Co. (Cross Creek)	560	9,088	412	14,648
Ebervale Coal Co	1,276	23,359	1,057	51,765
Stout Coal Co.	664	16,762	686	25,354
Harleigh Coal Co.	1,038	16,972	931	39,962
Ashburton Coal Co.	....	1,582	....	432
East Sugar Loaf	....	....	3,670	110,317
Upper Lehigh C. Co.	649	10,956	1,652	40,174
Highland	480	11,315	936	15,609
Mount Hall	....	88	155	845
Other Shippers	96	322	723	2,009
Total	10,318	257,482	19,153	693,810
FROM WYOMING REGION.				
Newport Coal Co.	....	3,533	....	783
Warrior Run Mining Co.	....	2,056	227	9,210
Parish & Thomas	659	9,548	1,181	33,968
New Jersey Coal Co.	357	6,365	401	13,235
Lehigh & Susquehanna Coal Co.	....	2,933	....	11,245
Germania Coal Co.	183	6,663	164	11,496
Franklin Coal Co	....	5,507	....	8,763
Audenried Impr'v't & Coal Co	561	6,292	....	7,550
Valley Coal Co.	....	189	....	384
Wilkes Barre Coal and Iron Co.	3,344	61,785	193	49,923
Baltimore Coal Co.	266	14,184	187	30,052
Union Coal Co	....	5,323	....	7,652
Wyoming Coal & Transp'n Co.	95	6,894	165	17,347
Everhart Coal Co	....	2,618	....	1,904
Morris & Essex Mutual	....	....	250	6,695
H. B. Hillman & Co	....	....	....	6,916
Bowkley, Price & Co.	....	....	....	1,745
T. F. Hunt & Co	....	....	....	774
John Horton	....	287	....	....
Mineral Springs	....	....	238	4,301
Other Shippers	498	8,908	895	1,361
Total	5,954	146,091	3,908	225,515
Grand Total	33,110	739,351	40,407	1,575,809
Total 1866	35,420	805,910	31,412	1,469,422
Decrease	2,310	66,559	....	....
Increase	....	....	8,986	106,386

Schuylkill Coal Trade.

BY RAILROAD & CANAL, FOR WEEK ENDING OCT. 10, 1867.

	Railroad.	Canal.
St. Clair	31,233	.....
Port Carbon	7,762	.....
Pottsville	1,202	.....
Schuylkill Haven	18,453	.....
Auburn	3,115	.....
Port Clinton	6,104	.....
Total for week	67,869	29 541
Previously this year	2,505,938	734,470
Total	2,573,807	764,011

Cumberland Coal Trade.

For the week ending Oct. 5, 1867.

From the Alleganian.

COAL TRADE BY RAILROAD.—Statement of Coal shipments over the Baltimore and Ohio Railroad for the week ending Oct. 5, 1867:

From C. and P. R. R.	Tons
American Company	2,099 19
Consolidation	3,031 16
Borden	817 08
New Hope	6s 04
Midland	181 02
Hampshire	.....
From Eckart R. R.	Tons.
C. C. and I. C.	960 09
Spruce Hill	.....
Black Avon	.....
Total	7,158 18
From George's Creek via Piedmont.	Tons.
George's C. & I. Company	1,806 05
Central do	2,224 06
Atlantic do	633 03
Piedmont do	594 00
Swanton do	827 12
Barton do	1,560 16
Potomac do	1,365 13
George's C. M do	181 01
Franklin do	363 12
Hampshire do	613 19
Total	10,239 07

BY C. & O. CANAL.—There were dispatched from the port of Cumberland, during the last week, boats laden with 13,040 03 tons of coal, forwarded by the following companies:

American	3,047 08
Borden	1,558 13
Central	3,136 11
Consolidation	1,472 05
Cumb. Coal & I.	2,815 03
Hampshire & Baltimore	1,009 13
Total	13,040 13

Coal transported over the Cumberland & Pennsylvania Railroad, during the week ending September 28th, and for year:

	To Canal.	To B. & O. R. R.
For week	11,152 01	15,052 05
For year	276,686 13	428,617 01

During the corresponding period of 1866, there were delivered to the Baltimore & Ohio Railroad 437,857 09 tons, and to the Chesapeake & Ohio Canal 219,149 17 tons.

Prices of Coal by the Cargo.

[CORRECTED WEEKLY.]

At New York, October 11, 1867.

Schuylkill R. A., choice	$5 75@$6 00		Lehigh Broken	5 12	....
" Ordinary	5 25	5 50	" Egg	5 12	....
" W. A., Lump	5 25	5 50	" Stove	5 20	....
" Steamboat	5 25	5 50	" Chestnut	4 20	....
" Broken	5 25	5 50	Wilkesbarre Lump	5 25	....
" Egg	5 25	5 50	" B'ken & Egg	5 25	....
" Stove	5 25	5 50	" Stove	5 50	....
" Chestnut	4 00	4 25	" Chestnut	4 75	....
Lehigh White Ash Lump	5 37	....			

SPECIAL COALS.—DEALERS' QUOTATIONS.

Diam'd Vein R. A., Sch'kill	....	....	New England Red Ash	$5 25	....
Locust Dale W. A., "	....	....	Broad Mountain	5 25	....
Honey Brook " Lehigh	5 50	....	Wyoming	5 00	....
Harleigh " "	5 50	....	McNeal Co.	5 50	....
Spring M'n " "	5 50	....	George's Creek (Balt.)	5 25	....
Sugar Creek " "	5 50	....	" " (Georget'n)	4 75	....
Ashburton " "	5 50	....	Locust Mount'n (Repplier)	5 50	....
Fulton White Ash	5 50	....	Duncan Red Ash "	6 00	....
Stout	5 50	....	W'barre Coal & Iron Co.	5 25	....
Old Co's " "	5 50	....	New Burgh Orrell Gas Coal	9 00	....
Buck Ridge W. A., Sh'kin	5 00	....	Despard Gas Coal	9 00	....
H. Heils, E. S'klin, Lorb.	5 50	....			

Dealers in these Coals may be found in our advertising columns.

At Philadelphia, October 11, 1867.

Lehigh Lump and St'mb't	$5 00@....		Schuylkill Chestnut	2 75	....
" Broken and Egg	5 00	....	Locust Mount Lump and Steamboat	4 25	....
" Stove	5 00	....	" Broken	4 25	....
" Chestnut	3 75	....	" Prepared	4 25	....
Schuylkill R. A. Prepared	4 25	4 50	" Chestnut	2 87	....
" Chestnut	2 75	....	Lorberry Coal	4 25	....
" W. A Lump and Steamboat	4 25	....	Shamokin	4 75	....
" Broken	4 25	....	Franklin, (Lykens Valley)	4 75	....
" Egg and Stove	4 25	....	Broad Top	4 75	....

Scranton Coal at Elizabethport, October 11, 1867.

(Corrected weekly by D. L. & W. R. R. Co.)

Lump	$4 25@....		Egg	4 75	....
Steamer	4 40	....	Stove	5 00	....
Grate	4 40	....	Chestnut	4 40	....

Prices for Pittston Coal at Newburgh, October 11, 1867.

(Corrected weekly by Penna. Coal Co.)

Lump, per ton of 2240 lbs.	$4 70@....		Egg " " "	4 70	....
Steamer, " " "	4 70	....	Stove " " "	4 90	....
Grate " " "	4 70	....	Chestnut " " "	4 20	....

70 cents additional to New York.

Lackawanna at Rondout, October 11, 1867.

(Average contract prices for year.)

Lump	$5 00@....		Stove	5 00@....	
Steamer	4 55@....		Chestnut	4 00@....	
Grate	5 00@....		Pea	4 00@....	
Egg	5 00@....				

Lehigh Coal at Elizabethport, October 11, 1867.

Lump	5 50@....		Chestnut	4 50	....
Steamboat and Brokenc	5 25	....	Stove	5 50	....
Egg	5 25	....			

At Baltimore, October 11, 1867.

Wilkesbarre & Pittston W. A. by cargo or car	$5 25@5 50		From wharf or yard, 75c. to $1 per ton additional.		
Lykens Valley R. A. by cargo or car	5 50@ 5 80		Retail, del'd, per 2,240 lbs	7 00@7 50	
Sunbury & Shamokin R. or W. A. by cargo	5 00	5 35	George's C'k and Cumberland f. o. b. at Locust P't	5 00@....	

At Havre de Grace, Md.

Wilkesbarre or Pittston, W. A., on board	$4 85@5 10		Sunbury or Shamokin, R. or W. A. on board	5 00@5 10	
			Lykens V'y, R. A. on b'd.	5 10@5 25	

At Georgetown, D. C.

George's Creek and Cumberland, on board ..... $4 25@4 50

Wilkesbarne Coal at Elizabethport, October 11, 1867.

(Corrected by Wilkesbarne Coal & Iron Co.)

Lump	$4 50	....	Egg	4 75	....
Steamer	4 50	....	Stove	5 00	....
Broken	4 75	....	Chestnut	4 50	....

Ten cents additional on shipments from Jersey City.

Prices of Provincial Coals.

[CORRECTED WEEKLY BY LOUIS J. BELLONI, JR., 43 PINE STREET.]

Duty $1.25 per ton.

Block House (on board)	$2 00	gold	Little Glace Bay	"	1 87½ "
Gowrie	1 75	"	International Co.'s	"	1 75 "
Lingan	1 75	"	Slack Coal, B. H.	"	75 "
Sydney	2 25	"	" L. G. B.		1 00 "
Pictou	2 25	"			

Prices of Foreign Coals.

Duty $1.25 per ton.

Corrected weekly by PARMELEE BROS., 32 Pine Street, N. Y.

Liverpool Gas Caking	$10 00		Liverpool House	"	17 50
" " Cannel	13 50		" " Orrel	"	16 00

Per ton 2240 lbs., Ex. ship.

PRICES FROM YARD

Liverpool Orrel, screened	18 00@....		Liverpool Cannel, scr'd.	20 00@22 00	

per ton 2000 lbs, delivered.

Coal Freights.

(Corrected Weekly.)

From Newburgh.

RIVER. Co.'s Boats.			EASTERN.		
Albany	50@....		Boston	1 60@....	
Barrytown	35	....	Bridgeport	1 12½	....
Catskill	35	....	Bristol	1 50	....
Cold Spring	30	....	Dighton	1 50	....
Coeymans	45	....	Fall River	1 45	....
Coxsackie	40	....	Mystic	1 50	....
Fishkill Landing	20	....	New Haven	1 12½	....
Greenbush	50	....	New London	1 25	....
Haverstraw	45	....	Newport	1 45	....
Hudson	35	....	Norwalk	1 12½	....
New York	70	....	Norwich	1 40	....
Nyack	50	....	Pawtucket	1 65	....
Peekskill	40	....	Providence	1 50	....
Poughkeepsie	25	....	Stamford	1 12½	....
Rhinebeck	30	....	Stonington	1 25	....
Saugerties	55	....	Warren	1 45	....
Sing Sing	50	....			
Stuyvesant	40	....			
Tarrytown	50	....			
Troy	55	....			
West Point	30	....			
West Troy	55	....			
Yonkers	55	....			

From Elizabethport.

Albany	$1 00@	— —	New London	1 15@	— —
Boston	1 75	1 80	Newport	1 40	— —
Bridgeport	1 00	— —	New York	55	60
Fall River	1 40	— —	Norwalk	1 00	— —
Hartford	1 50	— —	Norwich	1 30	— —
Hudson	1 00	— —	Pawtucket and towing	1 50	— —
Lynn	—	— —	Portland	1 95	— —
Middletown	1 25	— —	Portsmouth	2 15	— —
New Bedford	1 45	— —	Providence	1 40	— —
Newburyport	2 05	— —	Salem	1 80	— —
New Haven	1 00	— —	Taunton	1 40	— —

From Washington, N. J.

Hackettstown	$	58	Iron Dale	$	1 19
Waterloo		81	Dover		1 24
Stanhope		90	Paterson		1 75
Port Morris		93	Pompton		1 75
Rockaway		1 32	Bloomfield		1 85
Denville		1 33	Newark		1 90
Boonton		1 44	Belleville		2 00
Little Falls		1 76	Communipaw		2 00
Drakesville		1 08	Jersey City		2 10
Dickerson's Basin		1 11	New York		2 10

From Port Richmond, Philadelphia.

Amesbury Point	2 42½	— —	New Bedford	1 75	— —
Boston	2 05	2 10	Newport	1 75	— —
" bridges	03	— —	Portland	2 10	— —
East Cambridge	2 00	— —	Providence	1 75	— —
" bridges	03	— —	Salem	2 15	— —
Fall River	1 75	— —	Salisbury	2 50	— —
Lynn and dis.	2 25	— —	Washington	1 00	1 10
New York	1 50	— —			

From Baltimore.

To Philadelphia	$1 40@	— —	Boston	2 25@	2 50
New York	2 10	— —	Sound Ports	2 25@	2 50
Washington	1 10	— —	Norfolk	1 00@	— —
Annapolis	75	— —	Richmond	1 50@	— —

From Georgetown or Alexandria.

To Philadelphia	$1 50	— —	Boston	2 75	2 50
New York	2 15	— —	Sound Ports	2 25	2 50

Provincial Freights.

	Currency.
Sydney to N. Y.	$2 75
Sydney to Boston	2 75
Lingan	3 50
Lingan to Boston	3 00
Cow Bay	2 75
Cow Bay to Boston	2 75
Cow Bay to Portland	2 50
Big Glace Bay	3 87
Little "	2 75

Foreign Freights.

New Castle and Ports on Tyne	17@ keel.
Liverpool	17s 6d

Rates of Transportation to Tide Water, June 1, 1867.

PHILADELPHIA & READING RAILROAD.

From Pottsville to Philadelphia	$2 17
" " Port Richmond	2 07
" " New York, drawback off	2 80

SCHUYLKILL NAVIGATION.

From Pottsville to Philadelphia	2 08
" " New York, drawback off	2 88

Wyoming Valley Canal.

		Tolls.	Freights.
From Wilkesbarre to Havre de Grace		97c.	$1 55
" "	Columbia	69	1 20
" "	Middletown	67	1 10
" "	Harrisburg	65½	1 05

OTHER AVENUES.

From Mauch Chunk to	Philadelphia, Canal, including unloading	1 88
" "	Philadelphia, via North Penna Railroad	2 00
" "	Elizabethport, via N. J. Central Railroad	2 03
" "	Port Johnson	2 10
" "	New York	2 47
" "	New York via Del. Div. and Raritan Canal, including unloading	2 67
" "	New York via Morris Canal	2 20
" "	Hoboken via Morris & Essex Railroad	2 10
" "	New York	2 20

From Elizabethport to Buffalo, via New York Canal, a distance of about 459 miles—freight, $2 62, toll 78 cents 3 40

The shipping expenses at Elizabethport and Port Johnson vary from 25 to 30 cents.

BOSTON STOCK MARKET.

(By Telegraph.)

Prices bid to-day were as follows:

BOSTON, October 11, 1867.

Allouez	8½	Huron	—
Calumet	30	Isle Royal	—
Hecla	—	Minnesota	4¾
Canada	—	Quincy	25
Copper Falls	27½	Cary Improvement	6½
Franklin	17¾	Rockland	—
Hancock	—	Boston Water Power	18½

Sales at Boston Stock Exchange, October 10.

100	shares	Water P'r	19¼	150	shares	Franklin	17¾
10	"	Cary Imp.	7½	100	"	"	18
700	"	Concord	3½	10	"	"	18
200	"	"	s 30 3	100	"	Hancock	19¾
600	"	"	b.30 3½	100	"	"	s 30 19⅝
100	"	"	b 30 3⅝	100	"	"	19⅝
150	"	Allouez	3¼	100	"	"	b.10 19¾
100	"	"	b.10 3½	100	"	"	b.60 19⅞
950	"	"	3¾	SECOND CALL.			
4 5	"	Cop. F's	28	500	"	Allouez	3¼
100	"	"	b.60 29	100	"	"	b.60 3¾
200	"	"	b.30 28½	100	"	"	b.60 3½
100	"	"	b.60 28¾	100	"	"	3½
100	"	Pewabic	14½	100	"	Hancock	19¾
100	"	"	b.30 14¾				

SAN FRANCISCO STOCK MARKET.

(By Telegraph.)

SAN FRANCISCO, Oct. 5, 1867.

Mining stocks declining: Crown Point, $665; Hale & Norcross, $580; Yellow Jacket, $405; Chollar Potosi, $220; Kentucky, $190; Savage, $112; Imperial, $110; Ophir, $50. The Kentucky Company declares a dividend of $25 on shares for September. Legserthalend, 70½.

London Weekly Metal Report.

LONDON, E. C., September 13, 1867.

The Metal Market continues steady, with an average amount of business in all branches.

IRON.—Welsh bars continue in steady demand, from £5. 15. to £6. 5s. f. o. b. in Wales. Rails, £5. 10s. to £6. Additional orders for Staffordshire have come to hand. Scotch pig iron, after selling at 54s. 3d. cash, has declined to 53s. 9d.

COPPER.—The market is not quite so strong, operators waiting for the next Chili news. Tough, £80 to £81; a small business reported in Burra, at £85. Wallaroo, at £84 cash. Chili bars in Liverpool 100 tons sold at £73. Ore and regulus, 15s. per unit.

TIN continues in good demand, with a slight advance in price since our last. Straits, £90 to £90. 10s. cash, £91 to arrive, and with prompt. Some futile attempts have been made to depress the market by offering to sell at low prices for delivery two months hence, not sooner. By the Straits mail just received, we hear the riots among the Coolies continue. From Java we have the following statistics about the shipments of Banca, viz:—

	1867.	1866
January to April	13,239 pekuls,	33,526 pekuls.
April to June	18,187 "	19,485 "
	31,426	53 019

or 21,514 pekuls—43,168 slabs less than last year. Banca has been done at £94. English tin is firm at official quotations; an advance is not unprovable. The Dutch market is firm, at 54¾T. spot, 55½6. ex-sale.

TIN PLATES continue in fair demand.

LEAD has undergone no alteration. Good soft Eng., £19. 10; L. B. £2 2s 6d.; W. R. £21 15s.

SPELTER is rather firmer, but no great amount of business done. We quote spot £21. 5s. and ex ship. Special outports £21 7s. 6d. to £21. 10s.

Coal Items.

W. T. Ballano, of San Francisco, on the 7th of September wrote to the Secretary of State that, by a vessel from Kodiac, he had received a letter from Messrs. A. & G. Marsh stating that they had discovered a Russian American seam of pure anthracite coal, over thirty feet deep, and had traced it for a mile, near a good harbor, where there was an abundance of oak and fir timber.

The Denver (C. T.) *Gazette* says: We have been informed that extensive coal beds have been discovered eighteen miles south of Cheyenne, and that considerable excitement prevails there in consequence. It is said that some excellent specimens have been found, though we have not learned the depth of the pit from which they were taken. Two parties have expended a great deal of money in sinking a shaft, and they propose furnishing coal in a month. This will be a great thing for Cheyenne, as wood is at a much greater distance, and in the winter will command almost any price.

The London *Iron Trade Circular* says on the subject of coal exhaustion: The extent to which our coal is now exported may be looked upon by some persons as an alarming drain upon one of the most important resources of the country. Between 1852 and 1856 the value of the exports of coal has steadily increased from one and a-half to five millions. The fear as to the future supply will probably prove not more serious than the dread of dependence upon foreign countries for a supply of corn.

A joint stock company has been organized at Seattle, Washington Territory, with a capital stock of $50,000, for the purpose of working a coal mine near that place. Judging from the facts furnished by the Seattle *Intelligencer*, monied men in Portland and San Francisco might find far worse investments for their capital. It says: "The coal is admitted to be of a superior quality, and has been in use for some time upon the Sound. The holders of the land upon which the mine is located, and which comprises an area of four hundred and eighty acres, have secured two-fifths of the capital stock of the company. The location of the mine is only a short distance in the interior from the best harbor on Puget Sound; and no difficulty need be apprehended as regards the transportation of coal to the wharves of the city, as ample facilities for that purpose will be provided."

Iron Items.

The Scranton *Republican* has the following in reference to the new puddling mill which the Lackawanna Iron & Coal Company have for a year or more been building at Scranton. Of the twenty-eight furnaces, fourteen are now (August 28) producing about twenty-eight tons a day for No. 1 puddle bars. The new mill has two stationary engines. The larger one, which runs the rolls and the squeezer, was built by Morris, Town & Co., of Philadelphia. Its cylinder is three feet in diameter, and it has four feet stroke. The smaller one drives the fans which furnish the blast to the furnaces. It has an eighteen inch cylinder and three feet stroke. All the steam for these engines is made by the waste heat from the furnaces. About twenty men are now employed, under the superintendency of Mr. Wm. W. Scranton. The addition of this mill makes the Scranton Iron Works the largest in the country, with the single exception of the Cambria Works at Johnstown, Pa., and during the last year the production of iron has been greater at Scranton than at Johnstown, the works there having been run constantly night and day. It is by no means contemplated that the twenty-eight puddling furnaces now built shall be the limit of the new mill. It is expected to grow in every direction, and ultimately become a complete iron mill, distinct from the old works, as extensive as they, and probably even better appointed

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☞ Correspondents, exchanges and others addressing us should be *extremely careful* to write "JOURNAL OF MINING," instead of "MINING JOURNAL," to ensure safe carriage. Communications intended for publication should be plainly written, and on one side of the paper only.

NEW YORK, SATURDAY, OCTOBER 12.

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ALUMINIUM BRONZE.

Of all the alloys which aluminium may be made to form with other metals, none promise to be more useful or beautiful in their application to the arts, than the various combinations of aluminium and copper, called by the general name of the aluminium bronze. The alloy containing ninety per cent. of copper and ten per cent. of aluminium is especially adapted to a great number of applications; since it possesses a number of useful properties which are seldom united in one substance. Among these properties are hardness, malleability, tenacity, homogeneous structure, elasticity and resistance to organic acids, including the acids of fruit and fatty animal matter. It is well known that alloys often present characteristics totally opposed to those of their constituent metals. Before the discovery of steel, for instance, tools of great hardness were produced by mixing copper with tin and other metals. The ancient Peruvians attained a high degree of civilization, surpassing that which is commonly ascribed to the Age of Bronze, by the use of some such composition. It is true, that some of the processes by which the ancient alloys were prepared and hardened, are lost to mankind; but the fact remains, and is sufficiently illustrated by our modern experience, that such metallic compositions are frequently superior in many respects to any simple metals. In no case is this more strikingly exemplified than in the instance before us. Copper is soft, inelastic and easily oxidized; aluminium, although remarkable for its resistance to chemical action, is, in other ways, unsuited to mechanical uses; but the ten per cent. bronze is more tenacious than cast steel, more elastic than brass or gun-metal, and less liable to oxidize than silver. It tarnishes very slightly by exposure, but is at once restored to its lustre by simple friction. Its color is almost exactly that of eighteen carat gold used by jewelers. It may be gilt and soldered without difficulty; it may be cast and forged as well as iron. Its specific gravity is nearly that of iron, averaging 7.7. It has been used already for a great variety of purposes, and new applications are being rapidly introduced. Its brilliant color and lustre naturally adapt it to the manufacture of ornaments and jewelry. In England and Europe, the works, cases and chains of watches, snuff-boxes, harness-trimmings, door-knobs, window-fastenings, lamps, candlesticks, statuettes, vases, journals and pinions for machinery, pistol and gun-barrels, cannon, and many other objects, hitherto made of brass, ordinary bronze, or gold and silver, have been successfully manufactured from this material. In the French Post-office Department, it is said, plates of aluminium bronze have been substituted for the old perforated steel plates, used in the machinery for puncturing postage stamps, and have been found far more durable. One application which we have not mentioned, appears to us most desirable. No one who has ever broken a brass key, in vain attempts to move the rusty bolt of an obstinate lock—and who has not experienced this vexatious accident?—will deny that a key and lock which are as strong as steel, but do not rust, add much to the comfort of mankind. We have an awe-inspiring front door at home; and we never insert our night-key into its ponderous lock without secret fear of being left with the useless half in our nerveless grasp, and the pleasant alternative of jingling the bell in the basement, until it wake the sleepers in the upper stories. We think that aluminium bronze would also be an excellent material for coin, if it were not too much like gold.

This new alloy—we might almost say new metal, since it is far more homogeneous and intimate a combination than most alloys—is only manufactured at present, we believe, in France. A house in Maiden Lane is engaged in the importation of wares, manufactured from it; but confines itself to articles of table service—tea and coffee-pots, knives, forks, spoons, napkin rings, etc. These are sold here at prices not exceeding those of the best silver-plated ware. We confess that we scarcely expect to see them take the place of silver. Although they are not put forward as imitations of gold, they have an unfortunate resemblance to that metal; and few persons would care to use real gold for such purposes, while fewer still would like to be suspected of pretending to do so. Yet the great durability of the new wares—there being nothing like a plated surface to wear off—and the ease with which they can be polished and kept clean, may, in time, insure their general use. The possible mechanical applications seem to us far more important; and we hope to see them increase in frequency and variety.

The great desideratum now, is a cheap process for manufacturing aluminium. It is strange that this metal, constituting so large a portion of rocks and clay, and distributed over the whole earth more abundantly than any other, should be so difficult and costly of manufacture. We hear talk, already, of producing it in this country; but we cannot feel sure that, in the present expensive way, whether by means of the artificial chloride, or the natural fluoride, as found in the cryolite of Greeland, the manufacture of aluminium in this country could compete with that of France; and, above all, unless the price of the metal can be reduced, its use for a thousand purposes to which it is admirably adapted, will be for the present, out of the question.

PETROLEUM AS FUEL.

In our recent article upon the apparatus for generating steam with petroleum, invented by Col. H. R. FOOTE, we expressed the opinion that the economy in actual cost of fuel consumed is exceedingly doubtful. The *Scientific American* undertakes to demonstrate the absurdity of attempting to substitute petroleum for coal, by comparing the cost of the two materials, and their heat-producing capacity, as determined by the amount of water, in pounds, evaporated by a pound of each. It is true, that definite and trustworthy data for judging the new fuel are not yet at hand; but, from the imperfect statistics that have been published, we gather, that our contemporary has been unnecessarily severe on the petroleum fuel, and stated the question too unfavorably, in the following particulars:

1. The actual results obtained at the Navy Yard, are not the highest that have been observed in the evaporation of water by means of petroleum. Experiments are reported by Col. FOOTE'S engineer, in which more than twenty pounds of water were evaporated with one pound of petroleum.

2. This test is, moreover, not a fair one; since it leaves out of account the great loss involved in making the fires, drawing them, and adding from time to time new supplies of fuel, when coal is used; and also the expense of handling and feeding the coal; all of which are avoided by the use of petroleum. It is not our present purpose to determine the exact value of these items; but only to point out that they have a value, that they must be considered, and that any calculations which ignore them cannot be regarded as conclusive.

On the other hand, it is possible, in short experiments, to give petroleum an unfair advantage. A steamer takes a trip around Boston Harbor, and the amount of petroleum consumed is compared with the amount of coal usually required for the same trip. Here, the loss of fuel in first making the fire and in finally allowing it to go out, bears an under proportion to the whole consumption; and the results of such a trip might not be confirmed upon a long voyage. On the whole, we regard the economical aspect of the case as unfavorable to petroleum, but not hopelessly so.

For certain applications, indeed, the use of petroleum is already a *fait accompli*. We learn from the daily papers that Steam Fire Engine No. 3, Boston, beneath the boilers of which the authorities lately had placed Col. H. R. Foote's invention for burning crude petroleum, or other hydro-carbons, was ordered into service on Saturday, and did great execution at the conflagration on Federal St. One hundred pounds of steam were raised in three minutes, and when the engine was working at its full capacity, with the throttle wide open, the gauge showed 80 pounds of steam with a water pressure of 160 pounds. This was a gain of 30 per cent. water pressure over any other engine at the fire. The city has already ordered the same apparatus to be placed beneath other boilers.

PARADOX OR FALLACY?

A correspondent of the London *Chemical News* communicates, under the title of "Hydrostatic Paradox," the following remarkable experiment:

"Let two test tubes of equal dimensions, one nearly full, and the other about half full of water, be suspended at opposite ends of a beam, turning freely on a pivot, and let the second tube be so hung as to move in the same vertical straight line, during the vibration of the beam. Directly over this tube let a glass rod of smaller diameter be made to slide vertically through a fixed wire spring capable of holding it steady in any position. On lowering the rod carefully into the second tube so as not to touch its inner surface till the water therein is raised by displacement to the same level as that in the first tube, the two tubes will balance each other though the original weight of water in each is different.

"For if a be the area of the aperture of the tubes, h and h', the height of the two columns of fluid, w the weight of a unit of water, and P, P' the pressures on the base, we shall have $P = wah$, and $P = wah'$, the weight of water in the two tubes respectively. Therefore, when $h = h'$ we have $P = P'$.

"If the glass rod had been suspended from the beam of a balance during the experiment, it would of course be found to have lost just the weight of the water displaced, or just the additional weight needed to counterbalance the full tube. This additional weight, so to say, was given to the second tube by means of hydrostatic pressure."

This demonstration confounds hydrostatic pressure with weight. As the hydrostatic pressure is *in all directions*, it is evidently not fair to assume the pressure against the bottom of the second test tube as the same as weight, because there is an upward pressure against the bottom of the glass rod to be subtracted from it. The true statement of the problem would be as follows: Let us suppose, for the sake of simplicity, that the section of the rod presents two-thirds of the area of the section of the tube. If the first tube is full of water and the second tube half-full, then the water in the second tube will rise to the top when the rod has been pushed three-fourths of the way to the bottom. We shall then have the following pressures: Hydrostatic pressure on the bottom of the first tube, equal to the weight of the water $= G = P = wah$; pressure on the bottom of the second tube $= P = wah'$; upward pressure against the bottom of the rod $= P'' = w.\frac{2}{3}a.\frac{3}{4}h = \frac{wah'}{2}$. If h and h' are equal, we have the weight of the water in the second tube $= G' = P' - P'' = wah - \frac{wah}{2} = \frac{P}{2}$, or one-half the weight of the water in the first tube. The "paradox" is thus seen to be a fallacy; and any respectable balance will corroborate this reasoning.

ROSS BROWNE'S SECOND REPORT.

This report is said to be finished; and the Pacific papers contain various complimentary notices of it, and what purports to be a synopsis of its contents. We do not propose to judge it in advance; but it seems to us, from all we can discover of it, that it will be characterized, to a great extent, by the faults of its predecessor. Better than the first report it will be, because it couldn't be worse. But the list of those employed upon it, which we give in another column, shows that while some trustworthy experts have been called in, the most important parts of the work have been put into incompetent hands. The work of these gentlemen we shall criticise hereafter, and we should be glad to find our fears falsified. Mr. BROWNE himself is a rapid traveler and superficial observer by nature and education. He is the first instance we can recall of a "funny man," raised to the head of a great scientific work. The results, so far, do not encourage us to hope that this policy will be continued by the government.

Already some important territories are complaining in advance of the injustice which has been done them. We quote the following from the Salt Lake *Vidette* of September 18th:

"We observe that our Pacific cotemporaries are "tooting" their horns in praise of this forthcoming report. It may be all right to do so; it may be the style, however imprudent, and we will quietly succumb after we say our say. One Dr. Blatchley is, in some manner, associated with Browne in this great work. Blatchley drums up the facts and figures, and the humorous writer dresses them up in an entertaining style. Utah is to come in for mention in this work, because "Blatchley has traveled extensively in Utah." Let us say to our Pacific cotemporaries, and they can repeat it on our authority, and with the assurance that it is correct, that Dr. Blatchley on his tour of observation, in collecting statistics, passed through Utah like a dose of salts. Had he been a fugitive from justice with an officer in hot pursuit, he could have made no better time. He went in at one end of the Territory and out at another, as fast as the overland stage could carry him, and that is the extent of Blatchley's mineral researches in Zion. The work must be very reliable as a reference book about the mineral resources of Utah, if the compiler depends on Blatchley's personal observations here. It will hardly do to swear by, and, at any rate, won't do for Utah."

and this from the Owyhee (Idaho) *Avalanche* of Sept. 21st:

"J. Ross Browne is in the employ of the Government to collect statistics on the mineral resources of the Pacific States and Territories, and recently he was reported in Portland. Idaho is included in his territory and he will not visit it at all, but rely upon others to supply him with data for the required information. He may or may not do the Territory justice by this means, and he may plead in extenuation of faults of omission or commission that his time would not admit a personal tour of exploration, all of which may *read* quite well in a report, but will not amount to justice in the premises. He had better omit Idaho in his report, than to untruly represent it from any cause. His subordinates in Idaho and one or more sent here, are either interested in certain property, or were toadied round too much by manipulators of fancy mining property. Should Mr. Browne sift the matter down and come near doing Idaho credit, we'll readily do it to him likewise."

COLUMBIA COLLEGE

It gives us sincere pleasure to learn that Prof. ROOD, whose desperate illness we reported last week, has so far recovered as to be considered out of immediate danger. As he will, in any case, scarcely be able to lecture as usual during the coming winter, the trustees of Columbia College have delegated the active duties of the Professorship of Physics to his brother-in-law, Prof. BLAKE, of whom it is sufficient praise to say that he is "another of the same sort." We learn, also, that the leave of absence of Dr. F. A. P. BARNARD, the esteemed President of Columbia College, who is now at Paris, has been extended, and authority has been given him to pur-

chase physical and chemical apparatus of the latest foreign styles, to the amount of several thousand dollars. Old Columbia is full of life; and if she may be said to have waked out of sleep, it is not like Rip Van Winkle, who opened his eyes to find himself old, ragged and not good for anything, but rather like that celebrated pretty girl, who fell asleep, waiting for the right man and the right time, and who, when these arrived, arose refreshed and strong, and more beautiful than ever. The Sleeping Beauty, we are told, never took any more such naps, as long as she lived, but ruled her subjects well, and became the mother of a noble race. In this respect, also, we dare to prophesy, Columbia will make good the allegory.

THE FAIR CONTINUED.

The Fair of the American Institute still attracts the attention it deserves. At a recent visit, we had the pleasure of being blown through the big pop-gun railway, and restored our mental equilibrium by a vertical ride on the admirable mercantile hoisting machine of Otis, Brother & Co. The simplicity and certainty of the safety-brake on this hoisting apparatus should recommend it, we think, for use in mines, where the breaking of a rope midway in the shaft is often attended with terrible consequences. The marbleized slate mantle-pieces exhibited by T. B. Stewart, and those of the Middleford Fire and Building Stone Co., are truly magnificent. In the line of philosophical and chemical apparatus, there is but a meagre exhibition. John P. Gruber shows a good-looking bank scale and Herman Kohlbusch a couple of fine balances for chemical work. We see nothing from Becker. In the department of Fine Arts, which appears to include a large amount of fruit, rather the worse for wear, we observe a splendid display of carbon print photographs, from the establishment of Huston and Kurtz, and a number of Rockwood's well-known and highly esteemed pictures. The chromo-lithographs on exhibition are an improvement on the American productions of previous years in this department; but they are still far from possessing the softness, delicacy and fine color of the French and German prints. In the gallery devoted to sewing and knitting machines, we observe a large variety, but not so many, after all, as fully to represent this immense industrial interest. One of the neatest inventions on exhibition at the Fair is that of the American Hand Pegging Machine Co. which, being fed with strips of wood, makes pegs, punches holes and drives the pegs in, all by the turning of a crank, and is scarcely larger or more complicated than a coffee-mill. Machines which perform the delicate operations of manual labor are usually very complex; but this is a remarkable exception. All the leather-belting used at the Fair has been furnished by Hoyt Brothers, and a glance at the machinery department is sufficient to show that this part of the work is being well done. The patent Low-Water Detector and Alarm of Milo Peck is an ingenious application of a well known principle in physics—that the fusing point of every metal or metallic alloy is a fixed temperature. We notice as a curious *multum in parvo* for the workshop, Emerson's Patent Anvil, Shears and Punching Machine combined.

GAS

In our last number we published an article from the *Evening Post*, describing the good management and success of the Paris Gas Company. This glimpse of better things comes at the time when it is most tantalizing to the unhappy victims of New York and Brooklyn monopolies. One of the companies which divide Brooklyn between them is just now indulging in an amount of economy in the matter of light, which is almost as much as the people will bear. On a recent occasion, we left our palatial residence on Brookiyn heights, and proceeded to the office of the company, to inquire why our gas would not burn, why it had not burned decently for nearly a week, and when it might be expected to resume the habit of luminous combustion. We found the office crowded with citizens, all presenting, in various styles of eloquence, the same indignant questions. Small boys said "Ma wanted to know;" servant girls said "Missus wanted to know;" burly Milesians said, "bedad, *they* wanted to know;" and our own dignified plea for information was lost in the confusion. Meanwhile, the nuisance continues; and all that any body knows is, that the gas is diminishing, but the gas bills are not. Careful experiment shows the illuminating power of our big study burner to be one-sixteenth of a tallow-dip, previously immersed in water, and tested during the stage of extremest sputteration. Oh! for an hour of Paris gas!

NEW PUBLICATIONS.

THE CHEMICAL NEWS, *and Journal of Physical Science* (American reprint for October) comes to us with the following announcement:

It is with the highest satisfaction that the undersigned announce to the readers and friends of the *Chemical News* in America, that by arrangements just concluded with Mr. W. Crookes, F.R.S., of London, editor and proprietor of the English publication, their republication of the *Chemical News* in the United States is henceforth to be by his authority. In virtue of negotiations which have thus resulted, Mr. Crookes will hereafter furnish the undersigned with early weekly sheets of the English issue, and, after January 1, 1868, which terminates his current number, he will withdraw the circulation of the English edition of the *Chemical News* in the United States.

Under the circumstances of the case, the undersigned feel pleasure in submitting to the American public the following extract from Mr. Crookes's last letter:

"It is one satisfaction to know that the *Chemical News* has got into the hands of so energetic and upright a firm as yours. I assure you I highly appreciate the honorable motives which have led you to offer spontaneously what the law gives us no claim to. If all publishers acted as you do, there would be less need of an international copyright. If you can suggest any way in which I can assist, or in forwarding the interests of your edition, I hope you will do so, and I will meet your views as far as I can.

"Very truly yours, WILLIAM CROOKES."

It only remains to assure the friends of pure and applied science in the United States, and the public generally, that the American reprint of the *Chemical News* has already met with such a cordial reception among all classes of the community as makes it certain that in its republication, they are filling a place which was fully ripe for occupation. W. A. TOWNSEND & ADAMS.

October 1, 1867. No. 434 Broome Street, New York.

We share the satisfaction of the publishers in this amicable and honorable arrangement of a question which, because it cannot be reached by existing statutes, is all the more a matter of honesty and courtesy to upright men. If the monthly reprint could be so arranged as to give us the dates of the articles in the original periodical, we should have no fault to find with it.

STATEMENTS.

THE LEIGH COAL AND NAVIGATION COMPANY offer a new loan. Stockholders can obtain a circular relating thereto, containing general important information, on application.

THE PENNSYLVANIA R. R. COMPANY is now prepared to exchange its Registered Bonds, secured by a general mortgage upon the line from Philadelphia to Pittsburgh, of the Real Estate and Personal and Corporate Franchises therein mentioned, dated July 11, 1867, for the first and second Mortgage Coupon Bonds of said company on the road between Harrisburgh and Pittsburgh.

THE BARE HILL MINING COMPANY of Baltimore have closed their transfer books on account of the sale of the mine.

HURON MINING COMPANY (L. S.).—It is estimated that the debt of this company amounts to nearly $750,000; probably $500,000 is the most reliable figure. As to the settlement of it, it is still uncertain when and how it will be done.

PRODUCTS of some of the Portage Lake Mines for September: Isle Royal, stamps and mass, 55 tons, 1,240 lbs.; Pewabic, mass, barrel and stamps, 110 tons, 1,633 lbs.; Hancock, mass and stamps, 43 tons, 186 lbs.; Franklin, stamps, barrel and mass, 42 tons, 1,000 lbs. It is estimated that the Cliff product will be 100 tons. At the Copper Falls mine a recent heavy blast threw down not less than 100 tons of mass copper. The Isle Royal have on the way to the smelting works 7 tons of mass copper.

MEETINGS.

Richmond Iron Mining Co. at 165 Broadway, Room 17, election of trustees, Oct. 16th, 12 M.; Hampshire & Baltimore Coal Co. at 59 Trinity Building, (111 Broadway,) election of directors, Oct. 17th, 12 M.; Rathbone Oil Tract Co. at 69 Wall street, election of trustees, Oct. 14th, 12 M.; Washington Silver Mining Company at 80 Broadway, Room 43, election of trustees, Oct. 15th, 2 P. M.; Abbott Iron Company of Baltimore, Md., No. 8 South Gay street, amending by laws, etc., Oct. 22d, 10 A. M.; Aleora Oil Co. at 123 South Fourth street, Phila., election of directors, Oct. 19th, 12 M.

DIVIDENDS.

Lehigh Valley Railroad Company at 412 Walnut street, Philadelphia, quarterly, 2½ per cent., payable on and after Oct. 15th; Citizens' Oil Co. 115 Liberty street, N. Y., 1 per cent. now due; Ocean Oil Co., 25 cents per share; Mingo Oil Co., 2 per cent.; Wyoming Valley Canal Co. at 314 Walnut street, Phila., 4 per cent., payable on or after Oct. 21st, free of tax; Dalzell Petroleum Co. at 218 Walnut street, Phila., 2 per cent., payable on or after Oct. 17th, clear of State tax.

Scientific Meetings.

POLYTECHNIC BRANCH OF THE AMERICAN INSTITUTE.

GLACIAL THEORY — STEERING CANAL BOATS — IMPROVED WINDLASS — BOILER FEEDER — CARPENTER'S SQUARE — RAILWAY CARRIAGE — ROOT TRUNK ENGINE.

The regular weekly meeting of the Polytechnic Branch of the American Institute was held last Thursday evening, Prof. TILLMANN in the chair.

The reading of one of the usual scientific items called forth from Mr. Reid some laudatory remarks on the glacier theory, which evoked from Dr. Stevens a denial of the sufficiency of that theory for explaining all terrestrial phenomena. Dr. Stevens justified his position by some highly interesting facts of his personal observation, admitting every agency which would offer a sufficient explanation. Dr. Bradley ridiculed the idea of the earth ever having been covered with ice. The debate was, however, very desultory, and admitted of little more than a mere interchange of opinions.

Mr. FRICK exhibited an improved plan for steering canal boats. The invention consists in joining two boats together, and making the one act as rudder for the other by means of a wheel between the two. The boats are so connected as to allow the rear boat to form any desired angle with the front one, thus making the shortest curves very easy of accomplishment. With one additional mule two hundred tons may be as effectually drawn and steered as ninety tons by the old plan. This invention is now in successful operation on the Pennsylvania Canal.

Mr. WHITMORE explained, by means of a model, a new application of power to a ship's windlass, doing away with the old-fashioned spur and pinion, and substituting an endless screw. It, moreover, obviates the necessity of having more than one turn of the chain around the windlass. Power, speed, and economy of room were claimed for it. The application met with objection as to wear from some of the members, the ground of which was denied by others for the reason that, conceding the possibility, the windlass was so seldom used that there could be but little wear. The application has never yet been tested.

Mr. KNOWLES explained his patent water-feeder for boilers. It rests on the principle of the expansion of metals by heat, which, of course, is not a new idea. It consists of two brass pipes connected at one end by a return coupling, the other ends connected, one with the steam space, and the other with the water space of the boiler. By this means the water in the apparatus remains at the same level as in the boiler. To the end of the upper pipe a lever is attached, regulating the pump or feed-water cocks. The end of the lower pipe stands against the valve of an alarm whistle. The action is quite simple. If the water falls below the level of the upper pipe steam will enter and cause it to expand, moving the lever and starting the pump, which will then fill the boiler, and consequently the same pipe, causing it to contract, reversing the lever, and thus stopping the pump. Should the pump itself be defective, or the water supply fail from some other reason, the water in exhausting will reach the lower pipe, which will then expand against the whistle, causing an alarm which will continue until the wants of the boiler are supplied. To keep the machine in order it is only necessary to blow off, by cocks attached for the purpose, any sediment that may collect in the pipes. The lever shifting the belt involves another invention which seems quite simple and effective. This boiler feeder has been in successful use for some eight years.

Mr. BERGEN exhibited an improved carpenter's square, which altogether removes the necessity of stooping down to see whether the surface to which it is applied be level. The improvement consists of two blades playing up and down, which can only take the same position when the surface is even. Thus the workman can see at a glance, and from above, what he desires to know.

Mr. KERSHAW explained a section of a railroad carriage furnishing its own track. The design requires four wheels to a carriage, each wheel having its own track, which is circular. The wheels are to be three feet in diameter, and the tracks nine feet. The idea was pronounced both old and impracticable, and met with no little ridicule, much to the surprise of the exhibitor.

The regular subject of the evening, the engines now on exhibition at the Fair, was then taken up, when Mr. ROOT explained his trunk engine, which is sufficiently detailed in another portion of this paper. The consideration of other engines was postponed to the next meeting.

Correspondence.

[To insure insertion of Correspondence in our columns the full name and address of the writer must be given.]

Trouble Among Water-Wheel Men—To Whom Belongs that Certificate?

PATERSON, N. J., Oct. 1867.

EDITORS AMERICAN JOURNAL OF MINING:

We notice in No. 4, Vol. 3, of your paper, that an effort is made to bring to notice a certain water-wheel which claims to be the celebrated "Jonval Turbine," that obtained the highest per cent. of useful effect at the experimental tests in Philadelphia, in 1859 and 1860. This claim has the appearance of support by the insertion under the head of "SPECIAL NOTICES," of the certificate of H. P. M. Birkenbine, Chief Engineer of the Fairmont Water Works. Now this, as it stands, is an attempt to deceive the public; and believing you would not knowingly allow your valuable Journal to aid in any attempt of this kind, we ask you to publish this statement of ours to counteract any injury to us therefrom. We are the builders of the celebrated Jonval Turbine to which we were awarded the highest per cent. at the tests in Philadelphia, and certified to by Mr. Birkenbine, and we further say that the Turbine arrangement illustrated in your No. 4, is entirely different, and the advertiser has no right to use the certificate of Mr. Birkenbine in connection therewith. We should not notice this, had not the system of borrowing thunder been attempted by several other water-wheel men, who have used this same certificate. We trust you will oblige us by inserting this letter. W. G. & J. WATSON.

Imitations of Native Gold Grains.

The following communication from the assayer of the Philadelphia mint, exposes a fraudulent imitation of native gold grains offered at the mint:

ASSAYER'S OFFICE, U. S. MINT, Aug. 29, 1867.

HON. LINDERMAN, DIRECTOR, ETC.—A recent case of fraudulent imitation of native gold grains offered at the mint, suggests the propriety of giving some public caution. Those who are accustomed to the appearance of the real article would not be deceived by the manufacture, but the want of such experience might lead some purchasers into serious loss. I deem it hardly necessary or proper to state openly the constituents of this new and ingenious mixture; suffice it to say, that nitric acid, unless heated considerably, will produce little or no action upon it. The trial of boiling acid will settle any doubt. These made up grains have nearly the true color, but their shape is rounded and short-like—sufficient to condemn them without further trial in experienced hands. Respectfully, etc., J. R. ECKFELDT.

Coal-cutting by Machinery.

In view of the forthcoming trial of coal-cutting machinery for the handsome prizes offered by the colliery proprietors of South Lancashire and Cheshire, a gentleman named Sturgeon, of Burnley, a manufacturing town of East Lancashire, is located in Bolton for the purpose of preparing a machine to place in the competition. Profiting by the failure of other machines in discovering and remedying their defects, Mr. Sturgeon seems to have adopted a plan which, if it does not result in perfect success, will at any rate be a nearer approach to it than in certain instances. In general appearance Mr. Sturgeon's machine, which is self-acting, resembles a mortar, carried in trunnions, by means of which it can be adapted to any dip of the seam. The engine which gives motion to the machine is worked by compressed air, and consists of a small cylinder about seven inches in diameter, in which a piston works with a backward and forword motion, as in a steam hammer. The piston gives motion to an angularly-vibrating "cutter," working upon a centre or falcrum, and carried upon the machine. In its general form the "cutter" resembles a heavy pick. Its length of stroke is 36in. Hitherto it has been a defect in these machines that when cutting coal of unequal hardness, or in which pyrites or other solid matter are prevalent, the cutter has been prevented from penetrating to its depth, and the work left very irregular and incomplete. In Mr. Sturgeon's machine this is obviated by a very simple contrivance which causes the cutter to repeat its blows in the same place until the obstruction has been either cut through or dragged forth from the strata, and when at length the full length of the stroke is attained, the machine is advanced to make a fresh cut. The "cutter" having gone the length of its stroke, it would be almost impossible to withdraw it from the coal by a direct backward motion, and hence Mr. Sturgeon has applied a self-acting arrangement to his machine which gives the point to the "cutter," at the end of its forward strokes, a slight retrograde motion, thus enabling it to disentangle itself, and also to return without friction against the strata. The machine will enter a seam of eighteen inches in thickness, being six inches less than the minimum insisted upon in the forthcoming competition. Including the "cutter," it only occupies a place three feet square, and its total weight is only seven to eight cwt. As already stated, the machine is worked by compressed air. The air is condensed outside the pit, by a suitable air-pump, into a receiver, from which it is conueyed to the machine in the workings by an india-rubber pipe, and the machine may thus be moved about from one part of the workings to another without being cut off from the motive power. The compressed air, when liberated by the action of the piston, proves most beneficial. The cutter, coming with great force upon the stones embedded in the strata, is apt to "strike fire," which, in fiery seams, would of course be attended with much danger. By a well-known law of gases, however, compressed air when suddenly allowed to expand, produces great depression of temperature, and Mr. Sturgeon has availed

himself or this law to prevent the firing of splinters whilst his machine is at work. A pipe leading from the exhaust port meets another pipe leading from a small water vessel carried on the machine. The mouths of these two pipes meet at right angles, and the suction caused by the velocity at which the exhaust air makes its escape over the orifice of the water-pipe causes to be drawn up a small quantity of water, which on mixing with the cold air current is dashed into spray. This is directed towards the "cutter," and the groove it is forming, and has the combined effect of keeping the "cutter" cool, of reducing the temperature in the groove, preventing the accumulation of gas and the ignition of splinters, and also serving to keep down the dust. The production of cold air by this method may also materially affect the supply of coal from our coal-fields. It is commonly known that the deeper we descend into the bowels of the earth the higher the temperature becomes. Extensive seams of coal lie at a depth so profound as to be utterly beyond reach with present appliances, owing to the heat which is known to prevail at these depths, and the cost of raising the coal. But by the use of coal-cutting machines an abundance of fresh air, of very low temperature, might not only be thrown into the workings, but would be ejected at those points where it would be most required, and hence vast tracts of coal-field might be made available, and that, too, at a moderate cost. There is another peculiarity about Mr. Sturgeon's machine which we ought not to pass over. Hitherto only one operation has been performed by coal-cutting machines—under cutting in long lengths—but Mr. Sturgeon's machine will do the necessary work in tunnelling and in pillar and stall cutting. Hence, from all these considerations, it would appear that Mr. Sturgeon's labors are now likely to result in the attainment of the important object on which he has been so long engaged.—*London Colliery Guardian.*

Manufacture of Iron in Britain and Other Countries.

At the Dundee Scientific Meeting, Mr. J. Lowthian Bell read a paper on the present state of the manufacture of iron in Britain, and its position, as compared with that of some other countries. The paper was suggested by the opportunity offered in the Paris Exposition of comparing the position held by English and foreign manufacturers, which had led many to believe that Britain was not advancing so rapidly as many continental nations. Mr. Bell, therefore, wished, by a comparison of foreign and British iron-masters and their mechanical progress, to discover whether this opinion was well founded. He regretted that some of the English representations in the Exposition had exhibited specimens showing great slovenliness of workmanship; but, notwithstanding this, and the very fine specimens exhibited by foreigners, after careful investigation, in which he had received all possible assistance, he would maintain that British industry and enterprise had not fallen behind those of the Continent. Mr. Bell referred to the past history of the art as showing which nation had contributed most to its present advanced state. Beginning with the introdction of mineral fuel by Dudley, he spoke of Court's rolling mill and Nilson's application of heated air, to aid in reducing ore, as being really revolutions in the manufacture of iron. He further noticed the improvement of furnaces introduced by the Durham and Yorkshire iron-masters, which at once raised the temperature and effected a saving in fuel; the introduction of the steam-hammer for the manufacture of armor-plates; and the discovery by Sanderson that rolled plates would be more suitable. Such were the contributions of Britain, which other nations had turned to account. The chief difference between this and other nations consisted in the fuel. Foreign coal, not being so pure as our own gave rise to various improvements in its cleansing, and in the production of coke. Similarly, in France they turned to account the excessive wasted heat, and also the combustion of the gases which burn at the top of the furnace; but home ironmasters were not less ready to adopt these improvements when the price of coal made it profitable for them to purify it, improve the coke, and turn the gases and wasted heat to account. As to steel, Bessemer's improvements were so great as to eclipse all others. Mr. Bell remarked that his personal acquaintance with the manufacture of iron at home and abroad for many years, led him to suppose that there had been no change in the relative position of England and other nations. The present state of trade had led many to suppose that more rapid mechanical progress was being made abroad than in his own country, but this, he was persuaded, was a mistaken conclusion. If his country, the royalties to be paid in connection with mines were excessive as compared with those of the Continent, but this was counterbalanced by the expense to which foreigners were put in procuring fuel. Nor was it true that foreign workmen were better educated than those of Britain—neither can be looked on as superior, scientifically, to the other. Again, in Britain there was a greater facility for reaching a seaport owing to its insular position, but the easier charge for royalty and the lower railway charges compensated for this. This did not, however, account for the disappearance of much of the trade, which was wholly due to the cheaper rate at which labor is obtained abroad. He concluded by showing that on examination of the economic position of the workmen they stood on almost perfect equality as to the cost of the necessaries of life.

The Internal Heat of the Earth.

At the meeting of the British Association for the advancement of science, held in Dundee, in Scotland, a paper was read by Dr. Julius Schvarcz on the internal heat of the earth. The first section of the paper treated of the increase of underground temperature with the depth, and the doctrine of central fire. The writer of the paper had come to the conclusion that the different corollaries of the central-fire doctrine were not adequate to explain the different groups of natural phenomena, for the sake of which these corollaries were deemed essential fifty years ago. The whole system of the central fire doctrine, the alleged dubious moment of the increase of underground temperature alone excepted, was bound up merely by artificial ties, and as soon as the question of the supposed increase of underground temperature will be by direct empirical argument decided in the negative, then the ruin of the whole central-fire system would be inevitable. The paper concluded with some suggestions as to how experiments should be made in order to ascertain the temperature of the earth at different depths, simultaneously in different quarters of the globe. Sir Charles Lyell said he was glad to know that the subject of underground temperature was to be taken up at the expense of the British Association. He had long been convinced that, so far as the evidence now goes, there is an increase of temperature very generally as we descend from the surface of the earth as far into the interior as we can enter; though there was that increase of heat, it was quite a mistake to suppose that the best observations we possess at present indicate a uniform increase of temperature. That, he believed, would be one of the results of the inquiry, but it would also be a great point to ascertain what was the amount of difference of temperature at different places.

New Coal Depot on the New Jersey Central Railroad.

Port Johnson is one of the new coal depots of the Central Railroad of New Jersey. It lies in close proximity to the Bergen Point station, and an average of a thousand tons a day of coal are shipped from that point on vessels bound for different domestic ports. Three thousand tons have been shipped in one day, which is at the rate of over a million tons a year. Only a single pier or wharf has thus far been built. The trestle work is 2,650 feet long, and the wharf, itself a continuation of the trestle work, is 1,500 feet in length, 66 feet wide, and 18 feet high, with a basin on each side dug by dredging boats to a depth of 18 feet, which allows vessels of large size to load alongside. On each side of the wharf are twelve shutes or slides for pouring the coal rapidly into vessels. One end of these shutes extends to the middle of the pier, and receives the coal from the cars through a trap door at the surface. Very little coal is shipped to foreign ports, except what is sent round Cape Horn to Panama, for the use of the steamers plying on the Pacific coast, and to Australia. These vessels usually load at Elizabethport, whence an average of three thousand tons a day is shipped. The large sea steamers running from this port to Europe and elsewhere receive much of their coal from Elizabethport and Port Johnson, but have it delivered at their docks in lighters. While receiving coal they also load and discharge cargo. The New Jersey Central Company own a large tract of marsh extending on both sides of their pier at Port Johnson. After allowing space for additional piers, the company are laying out the ground in streets and avenues for future buildings, when the ground becomes properly drained and filled in. A beginning has already been made in the construction of a neat row of wooden two-story houses, for the use of laborers employed upon the spot. More of these will soon be built. The adjacent region has a rock foundation. The company are boring an artesian well upon the upland, back of their pier at Port Johnson. Rock was found at a depth of twenty feet, and this has been bored for a distance of thirty-five feet, but, thus far, without finding water.—*New York Post.*

Arizona.

The Arizona *Miner*, of August 17th, contains the following statement: The books of the Assessor show that the whole amount assessed thus far since his duties commenced, is $10,500. Of this a little over $7,000 is included in the annual taxes for 1867, $3,200 of which is derived from income tax, and a large proportion of the balance from the tax on wholesale and retail liquor dealers. It appears from the returns that 79 individuals and firms pay special tax as dealers in liquor—rather a strong array for a population of 8,000—making it evident that about 100 men, women and children support a whisky dealer in Arizona. The lists show that with the exception of flour, quartz and saw-mills there are no manufactories in the Territory. In the older States more than half the revenue is derived from the tax on manufactured articles. The income list does not show that many of our citizens have added largely to their capital during the year past, although it as fair an exhibit as we expected under the circumstances. None of the various mining companies operating in the territory have previous to January 1st, 1867, realized much profit from their labors; on the contrary few of them have done more than expend money in developing mines and erecting mills and machinery—but the wealth of Arizona in minerals is, we believe, not inferior to other States and Territories of the Pacific, and in time the income returns will show that here, as in California, fortunes are realized in mining. No miner in the Territory, we believe, paid tax for the year 1866 on income derived from mining.

Relative Values of Gold and Silver.

The relative values of gold and silver have been ascertained, with probable accuracy, almost from the date of the discovery of these precious metals and their use as mediums of exchange. In the time of Abraham the relative value of gold to silver was one-eighth; a thousand years before the Christian era it was one to twelve; B. C. 500 it was one to thirteen; at the commencement of the Christian era it was one to nine. Since that period the standard, more positively stated, has been as follows:

A. D. 500	gold to silver as	1 to 18
A. D. 1100	" "	1 to 8
A. D. 1400	" "	1 to 11
A. D. 1600	" "	1 to 13
A. D. 1700	" "	1 to 15½

With a slight variation the latter ratio continued to 1848. Before the California discoveries in that year, gold uniformly commanded a premium which the influx then destroyed, and the demand for silver occasioned a slight premium on the latter. The value of gold to silver in London that year was 1d to 15d. The price of gold was then 77s. 6d per ounce, and of silver 59½d. per ounce. On the 1st of January, 1866, silver was 62d per ounce. This rise was due in a degree to the fact that short supplies of cotton from this country during the war required large sums of silver to be sent to India for cotton as well as for other articles. After the gold discoveries in California, France began to exchange her silver for gold currency, sending the silver to India for silks and other products. The tea and silk trade of China with all countries also absorbs an immense amount of silver.

MACHINERY CAST FROM OREGON IRON.—The *Oregonian*, August 30, says: Mr. David Monastes, on Wednesday evening, cast at his foundry in Portland, Oregon, several pieces of machinery, for the flouring mill of Mr. Kinney, of McMinnville, using only Oswego pig iron. Yesterday morning the castings were removed from the sand, and were visited during the day by many persons curious to see what sort of work our domestic product would make. The universal verdict is that the castings are excellent, combining both smoothness and strength. Mr. Monastes and several other experienced workers in iron say without hesitation that it is the best they ever saw. As compared with Scotch pig it is finer and more even in grain, and vastly more difficult to break, and it is of course proportionally superior for machinery. The machinery cast by Mr. M., it is expected, will be in place in the mill and running Saturday, just one week from the time when the first pig of Oregon iron was run off from the furnace at Oswego.

Mineral Product.

From the commencement of the Christian era to the discovery of America, it is estimated that gold had been taken from the surface and mined to the amount of $3,800,000,000; from that date to the close of 1842, $2,800,000,000; to 1860, Russia adds $746,000,000, and California and Australia 2,000,000,000 more. The annual average product of gold at the commencement of the Christian era is estimated at $8,000,000; at the discovery of America this product had diminished to $100,000; in 1600 it had increased to $2,000,000; in 1700, to $5,000,000; in 1800, to $15,000,000; in 1843, to $34,000,000; in 1850, to $38,000,000; in 1853, to $236,000,000; there was a subsequent falling off, so that in 1860 the product was only $210,000,000. The average annual loss by the wear of coin is estimated at one-tenth of one per cent. The loss by consumption in the arts and by fire and shipwreck is calculated at from one million to three millions per year. It is not claimed that these estimates are entirely correct; they are approximately so, no doubt.

Patent Claims.

Interesting to Miners, Millmen, Metallurgists, Oil-Men, and Others.

The following claims have recently been issued from the United States Patent Office:

69,345.—PUDDLING AND OTHER FURNACE.—William Jeffries, West Bromwich, Eng. Patented in England, January 26, 1866:

1st. I claim the improvements in puddling furnaces and heating furnaces, and other reverberating furnaces used in the manufacture of iron and steel hereinbefore described, and illustrated in the accompanying drawing, that is to say, constructing the beds of the said furnaces, substantially in the manner hereinbefore described and illustrated, whereby the the whole or nearly the whole of the plates used in ordinary furnaces are dispensed with, and great economy, both in the cost of keeping the furnaces in repair and in the saving of time consequent upon the furnaces working a long time without requiring repair, is obtained.

2d. Manufacturing a fettling for lining fettling, or repairing reverberatory furnaces, by tupping or running liquid mill or other cinder into moulds so as thereby to form bricks or blocks, which bricks or blocks are used to line fettles, or repair the bottoms of reverberatory furnaces, instead of fettling the said furnace with red ore, pottery mine, and tap cinder, calcined and ground as is usual.

69,360.—WATER WHEEL.—John Mumma, Middleton, Ohio. Antedated, September 23, 1867.

1st. I claim the elongated curved buckets S, terminating at their upper ends with the cup, V, constructed, arranged, and operating in the manner and for the purpose described.

2d. The feeding cylindrical gate, C, in combination with the floats, m, lever, B, and rods, D, arranged and operating substantially as described.

3d. The cylindrical rack or screen, B, in combination with chutes, and gate, C, arranged as described for the purpose specified.

4th. The combination of the ball gates a, with chutes, d, operating substantially as specified for the purpose set forth.

5th. The rings, b b, arms, i, chains, h, guide rods, t, and roller, F, arranged in relation to the ball gates, a, substantially as for the purpose specified.

6th. The chute disk, I, with its packing ring, r, in combination with chutes, d, and annular diaphragm, K, arranged above the wheel and its curb, J, all constructed and operating substantially as and for the purposes described.

69,370.—MACHINE FOR PREPARING PEAT FOR FUEL.—A. M. Sawyer, Athol, Mass.

1st. I claim the combination of an apparatus for grinding or disintegrating the peat, the endless apron, b, and the squeezing rollers, C and C', arranged substantially as described.

2d. The combination of the endless apron, b, the squeezing rollers, C and C', and the scraper, F, substantially as described.

3d. The scrapers, h h, within the hopper, R, in combination with the series of molds, substantially as described.

4th. Arranging the cams that work the pistons in and out, so as to be adjustable, as described, so that the movement of the pistons in the direction of the diameter of the mold wheel may be varied and thereby the compressing capacity of the mold be increased or diminished, substantially as described.

69,384.—HOISTING APPARATUS.—W. D. Andrews, New York City.

I claim the use of two plain or grooved friction wheels of different diameters upon one shaft when the same are operated or driven by two similar friction wheels of different diameters on one driving shaft placed nearly parallel thereto, and so arranged that the speed and power may be varied and thereby the compressing capacity of the mold be increased or diminished, substantially as described.

69,397.—COAL ELEVATOR AND DISTRIBUTOR.—H. C. Clark and Robt. B. Little, Providence, R. I.

I claim, 1st. A coal elevator which is arranged substantially as herein shown and described, so that coal and other material can be raised from the hold of a vessel and discharged into any desired one of a number of temporary compartments or pockets and be discharged from the latter into cars or carts, ready for delivery to families, all without requiring any manual labor, except what is required for raising or lowering the necessary doors or traps, as set forth.

2d. The extension rails, G, when hinged to the ends of the rails, F, so that they can be folded out of the way, substantially as set forth.

3d. The adjustable bolsters, s o, when arranged as set forth for the purpose specified.

4th. The revolving trough, J, when arranged in combination with the rails, F F, of an elevator and with the chambers, B B, substantially as herein shown and described.

5th. The revolving trough, J, when provided with trap-doors, p, substantially as and for the purpose herein shown and described.

6th. The device for regulating the discharge of the coal and other material from the pockets or chambers, B, consisting of the screen or board, a, in combination with the hinged plate, d, and with the cord, e, all made and operating substantially as and for the purpose herein shown and described.

7th. The folding extension, G, when made as set forth arranged in relation with the adjustable bolsters, o, stationary track, F, and flexible revolving trough, J, all made and operating substantially as and for the purpose herein shown and described.

69,410.—WATER WHEEL.—William Cooper, Hancock, Md.

1st. I claim the gates, G, operated through the medium of the circular plate, I, pivoted arms, H, and springs, J, all arranged substantially as and for the purpose specified.

2d. The combination and the arrangement of the slotted arms, H, springs, I, plate, I, as and for the purpose specified.

63,495.—WATER WHEEL.—Samuel Shive, Forks, Pa.

1st. I claim the wheel, A, mounted on the sliding frame, B, secured to the hinged pulley frame, D, and operating substantially as described, for the purpose specified.

2d. The hinged pulley frame, D, in combination with the wheel, A, constructed and operating substantially as described.

69,505.—FURNACE.—Wm. Stevens, Bloomington, Ill.

1st. I claim the tube, E, and pipes, t t, arranged in the manner as specified, and used for the purpose set forth.

2d. The arrangement of the chamber, D, perforated plate, G, in combination with the tube, E, and pipes, t t, in the manner and for the purpose specified.

Special Scientific Brevities.

☞ M. Prat states that he has isolated fluorine by heating fluoride of lead either with nitrate of potash or binoxide of manganese. The result of this operation is a mixture of oxygen gas and fluorine, the former of which is arrested and fixed by passing the mixture over heated oxide of barium. Fluorine passes on alone, and, according to the author, has the following properties: It is an almost colorless gas with an odor resembling that of chlorine; it is incombustible, and heavier than atmospheric air; it decolorizes indigo, and reddens litmus; it fumes on coming in contact with air, and gives dense fumes with ammonia; it instantly decomposes water at the ordinary temperature, combines with hydrogen gas in diffuse light and decomposes hydrochloric acid. Lastly, it easily enters in combination with all metals, but the author adds that the compounds with platinum and gold require further study. M. Prat's experiments are to be repeated before a chemical committee of the Paris Academy of Sciences, and we shall await the report with much interest.

☞ Turbid water, holding any kind of earthy substances, is rendered fit to drink in from seven to fifteen minutes, if to each liter there be added 4-10ths of a grammne of finely powdered alum, or three-quarters of a pound to every ton of water, care being taken to agitate the liquid when the alum is introduced.

☞ Barton produces red lead by heating the oxide of lead to redness with nitrate of soda, or by heating at the same temperature a mixture of 1,895 parts of sulphate of lead, 665 parts of carbonate of soda, and 177 parts of nitrate of soda. The resulting mass is to be washed.

On-dit about Minerals, &c.

☞ The Mexican silver mines have yielded, through the worst wars, not less than thirty-five millions annually. Upon this product the Government reaps a yearly revenue of five per cent. for export duty. Probably the mineral wealth of Mexico has but just begun. The region of Los Virgines is supposed to be very rich, yet like other districts, it is full of abandoned mines. The truth is that in Mexico, up to a comparatively recent time, the art of mining has been primitively rude, and the policy of the government has still hampered production. Now, that machinery is going into the interior and the absurd tax has been removed, the aspect of things is rapidly changing.

☞ Nickle is a brilliant, ductile, and malleable metal, discovered by Cronstedt in 1751. It is found associated with cobalt and with iron in the ore, and is a common constituent of meteoric iron. The usual sources of supply are the arsenurets of nickel in cobalt and in what the Germans call Kupfernickel or copper-nickel, containing 56 per cent of arsenic and 44 per cent of nickel. Nickel is found in Saxony, Thuringia, Hesse, Styria, Bamberg, and in Sweden. In this country its ores are found at Chatham, Conn., and in Lancaster, Pennsylvania, or rather about fourteen miles from the latter place, from which most of that used in the government mints is obtained.

☞ M. de Closmadeuc has discovered in a small desert island, in the Bay of Morbihan, France, a very fine Cromlech, containing more than sixty obelisks of granite, forming a regular circular of 180 metres in circumference. A curious fact is that only one half this Cromlech, which is supposed to have been a Druidical altar, is now on dry land, owing to the encroachment of the sea. M. de Closmadeuc has made large excavations in the neighborhood, and discovered an enormous quantity of pottery, similar to that found in Celtic monuments; several hundred flints worked by man, as well as a large number of hatchets.

☞ The Lancaster (Pa.) *Eagle* describes the natural bridge, twelve miles south of that place, showing it to be nearly as great a curiosity as the world-famed natural bridge of Virginia. The bridge is of solid sandstone, 150 feet in length, and from 8 to 20 wide, spanning a ravine at an elevation of 45 feet from the bottom. It is level on the top and arched below, with a curviture of about 30 degrees. The *Eagle* says that the persons who have visited both, pronounce this bridge equally a wonder, except in size, with its celebrated Virginia rival.

☞ The manganese mine at Red Rock, in San Francisco bay, yields ore in sufficient purity to warrant its working, a fortune which has attended the working of no other manganese mine in the country. In three weeks, five miners extracted upward of sixty tons of first class ore, the market price of which is $30 per ton. The ore is extracted by contract at $10 per ton, the contractor agreeing to pay all expenses, from the raising of the ore to its delivery at San Francisco.

☞ Diamonds have been found in the Cape Colony, in the neighborhood of the Orange river, by some Amsterdam prospectors; one of the gems is valued at $5,000.

☞ There is great excitement at Victoria, Van Couver's Island, over the supposed volcanic eruption, sixty-five miles distant, in the Cascade Range.

☞ The Petrolia (C. W.) *Valuator* quotes oil "60 cents a barrel at the wells." At such a price a large margin favors exportation, it thinks.

All Sorts.

☞ No description can give an adequate idea of the intense rigor of the six months winter in Spitzbergen, says a recent writer. Stones crack with the noise of thunder; in a crowded hut the breath of the occupants will fall in flakes of snow; wine and spirits turn to ice; the snow burns like caustic; if iron touches the skin it brings the flesh away with it; the soles of your stockings may be burnt off your feet before you feel the slightest warmth from the fire; linen taken out of boiling water instantly stiffens to the consistency of a wooden board, and heated stones will not prevent the sheets of a bed from freezing. If these are the effects of the climate within an air-tight, fire-warmed, crowded hut, what must they be upon the dark, storm-lashed mountain peaks outside.

☞ It is said that Wm. H. James, who is reported to have been the inventor, in 1820, of tubular boilers, is living in England, at the age of seventy years, in abject poverty. It was ascertained that he had been living without food for several days, and had supported existence for a year by pawning his clothes, tools, and furniture. A subscription was started for his relief, which promises to place him beyond future want.

☞ A Paris coachman having lost his tongue by amputation—considered necessary because of a cancer thereon—a surgeon of the Hotel Dieu replaced it with one made of India-rubber. Although, like old dog Tray, "he cannot speak," he tastes and smokes his pipe with apparent enjoyment. After eating he takes out his tongue, cleans it, and carefully lays it away in his pocket until it is again called into requisition.

☞ Professor Agassiz read a paper before the National Academy of Science at Hartford, recently, in which he maintained that men, like animals, had tails. The Professor should next enlighten us whether men, like other animals, could be "bobbed" with safety.

☞ To such wonderful perfection has the process of manufacturing test objects for microscopes been carried, that M. Nobert, of Greifswald, in Prussia, has engraved lines upon glass so close together that upwards of 80,000 would go in the space of an English inch.

☞ The people of Montana are satisfied that the Indians are fast becoming civilized, as "the men rig themselves out in plug hats, and the women wear mosquito nets to keep off the flies."

☞ In Ceylon there is a fig tree 2,155 years old, having been planted 288 B. C. Its history from that date is preserved by both documentary and traditional evidence.

☞ In order to keep up with the progress of the age, Time has abandoned the scythe and hour glass, and purchased a mowing machine and a watch.

☞ There is only one objection to people who "mean well," and that is they never can spare time to carry out their meaning.

Special Notices.

Safety Boilers.

The recent disastrous steam-boiler explosion has had the effect of turning public attention to these boilers, which, by their peculiar construction, offer the greatest security against such catastrophies. The new Root Boiler, which is constructed of a series of wrought iron pipes, is, we notice, meeting with much favor, and is being adopted into our city manufacturories, not alone on account of its safety properties, but because of its economy in the use of fuel, space, etc. For the information of those who may desire to see this boiler at work, we will state that one of twenty horse-power has recently been introduced into the establishment of Mr. W. T. Howell, No. 77 Beekman street, and can there be seen in operation in conjunction with a Root Trunk Engine. Both render good service.

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Engines and Boilers, complete, 5 H. P. 1,750 pounds, $770; 10 H. P. 4,000 pounds, $1,125; 20 H. P. 7,500 pounds, $1,880; 40 H. P. 13,000 pounds, $3,145.

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Charles Schenk, a resident of Pah-Ranagat Silvermining District, and County Surveyor of Lincoln county, Nevada, begs leave to inform the mining public, that he is able and ready to give true and valuable information about mining property in this district. CHARLES SCHENK, M. E.

References—Wm. A. Smith, 25 and 27 Nassau st.
Professor Harper, New York, etc. oct12, '67—'68

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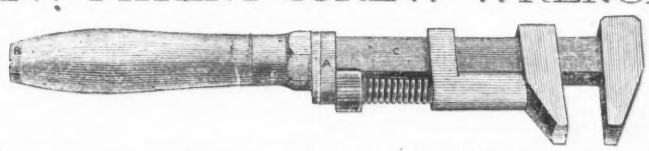

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Prof. Harper, New York, etc. oct12, '67-'68

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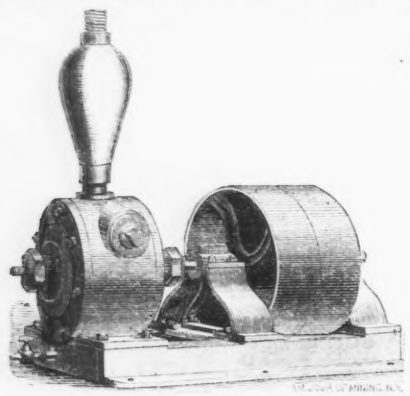

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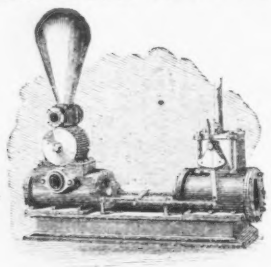

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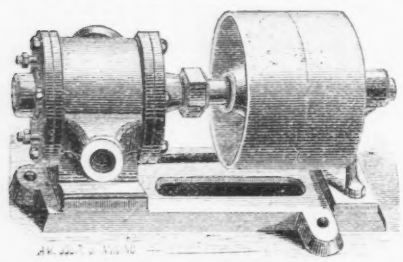

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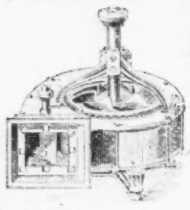

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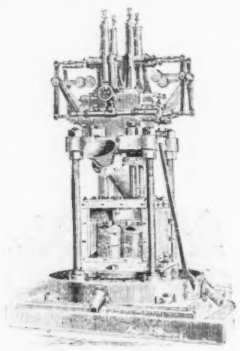

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[Extract from the New York Daily Times, March 28th, 1867.]

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It is claimed for the above process, that the steam not only desulphurizes but drives the heated mercury through the quartz in every direction; and the revolving of the cylinder constantly intermingles the quartz and mercury, so that every particle of the gold and silver must come in contact with the heated mercury and consequently be taken up, thereby accomplishing a most perfect system of amalgamating and desulphurizing. Patented Dec. 22d, 1865.

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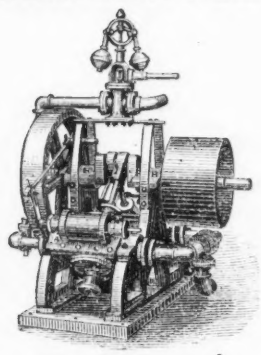

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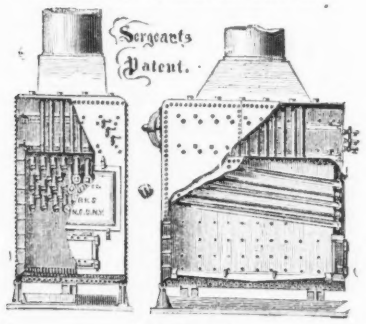

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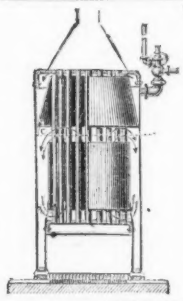

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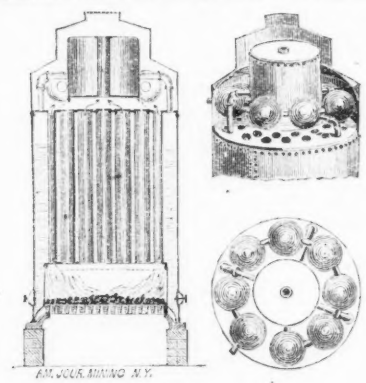

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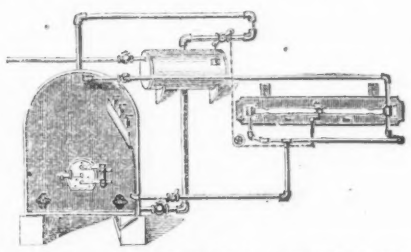

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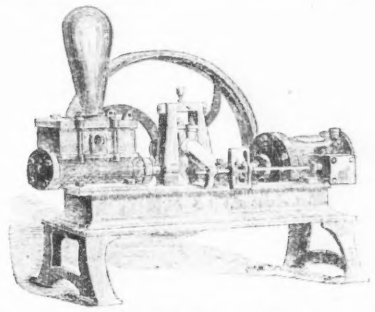

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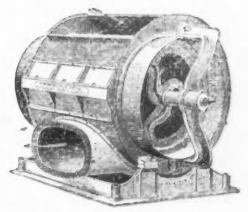

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OFFICE AMERICAN JOURNAL OF MINING, 37 Park Row, N. Y.
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